

MCWP 3-25.4

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# MARINE TACTICAL AIR COMMAND CENTER HANDBOOK

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**U.S. Marine Corps**

PCN 143 000056 00

DEPARTMENT OF THE NAVY  
Headquarters United States Marine Corps  
Washington, D.C. 20380-1775

21 Sept 1998

FOREWORD

The Marine air command and control system (MACCS) provides the Marine aviation combat element (ACE) commander with the means to exercise command and control of organic and nonorganic aviation assets necessary to support Marine air-ground task force (MAGTF) operations. Marine Corps Warfighting Publication (MCWP) 3-25, *Control of Aircraft and Missiles*, addresses basic Marine Corps air command and control philosophy. MCWP 3-25.3, *Marine Air Command and Control System Handbook*, addresses basic planning considerations for MACCS interoperability, employment, and operations among MACCS and joint Service agencies.

MCWP 3-25.4, *Marine Tactical Air Command Center Handbook*, complements and expands on the information in MCWPs 3-25 and 3-25.3 by focusing on the details of Marine tactical air command center (TACC) operations and the role it plays in integrated MAGTF, joint, and multinational operations.

This publication presents the baseline TACC that would be fielded by a single-wing ACE supporting a standing Marine expeditionary force (MEF) in the conduct of sustained operations ashore. Larger- and smaller-scale operations can be supported by adding to or subtracting from the baseline configuration.

Designated for MAGTF, naval expeditionary force, and joint force commanders and staffs, as well as all MAGTF officers and staff

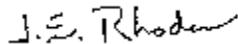
noncommissioned officers, MCWP 3-25.4 highlights tactical air command center—

- | Organization and manning.
- | Equipment.
- | Planning considerations.
- | Operational fundamentals.
- | Employment options.
- | Training fundamentals.

By investigating these areas, MCWP 3-25.4 provides the requisite information needed by commanders and their staffs to understand and evaluate the operational principles and capabilities of the Marine tactical air command center.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS



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DISTRIBUTION: 143 000056 00

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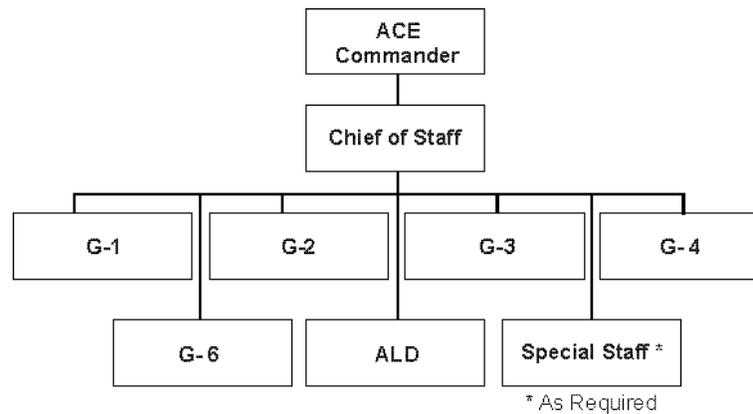


# Chapter 1

## Fundamentals

The ACE commander is normally the MAGTF tactical air commander (TAC) and advises the MAGTF commander on the most effective employment of ACE assets. The ACE battlestaff assists the ACE commander in executing duties by providing specialized expertise and advice.

The ACE battlestaff (fig. 1-1) consists of the chief of staff, the principal staff officers (G-1, G-2, G-3, G-4, G-6, and aviation logistics division [ALD] representative), and special staff officers (e.g., staff judge advocate, surgeon, chaplain) required by the situation or the ACE commander.



**Figure 1-1. ACE Battlestaff.**

The chief of staff is the principal assistant and advisor to the ACE commander. The principal staff officers provide functional expertise and recommendations during deliberations. The staff principals facilitate the ACE's capability to plan and conduct missions across the operational spectrum by directing the activities of their respective staff sections based on a shared understanding of the ACE commander's intent.

The ACE commander convenes the battlestaff, while the chief of staff coordinates and directs the battlestaff's efforts. The battlestaff will normally meet regularly with the ACE commander to review ongoing operations and assist in forming the ACE's concept of operations for planned activities.

## **MISSION AND FUNCTIONS**

The ACE commander exercises air operations authority through the Marine air command and control system. The tactical air command center (TACC) is the senior MACCS agency. It is the operational wing command post from which the ACE commander and his staff plan, supervise, coordinate, and execute MAGTF air operations (this includes the planning and execution of all air tasking orders [ATOs] and the execution of the current ACE operation order [OPORD] or fragmentary order [FRAGO]). The TACC is the MACCS agency that exercises command. The TACC integrates the six functions of Marine aviation with the MAGTF command element through linkage with the MAGTF combat operations center (COC) and the force fires coordination center (FFCC). The TACC provides functional interface for employment of MAGTF aviation in joint and multinational operations. It is referred to as the Marine TACC to avoid confusion with the Navy tactical air control center.

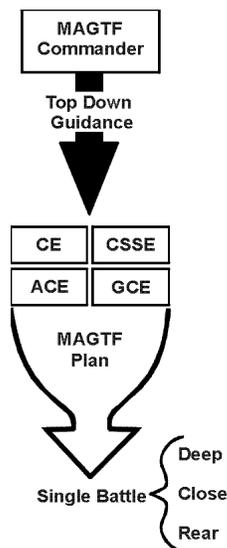
As the focal point for the planning and execution of MAGTF air operations, the following functions will be performed from the TACC:

- | Manage the execution of the current ACE OPORD or FRAGO.
- | Manage all aircraft and surface-to-air weapons in the MAGTF's area of operations.
- | Monitor the status of MAGTF air assets and air operations.
- | Serve as the operational point of contact between the MACCS and external air control agencies.
- | Coordinate the operations of subordinate MACCS agencies.
- | Develop and issue MAGTF air operations plans and orders including MAGTF air tasking orders.
- | Recommend apportionment of MAGTF air assets to the MAGTF commander.
- | Provide centralized direction for the allocation and tasking of MAGTF air assets.
- | Direct execution of MAGTF air operations.
- | Coordinate MAGTF air operations with other theater air operations.
- | Establish all air defense control measures in the MAGTF's area of operations including air defense warning conditions and weapons control statuses.
- | Evaluate the results of MAGTF air operations.

## MAGTF SINGLE BATTLE CONCEPT

The TACC is organized as a fully integrated facility to promote the intra- and inter-staff coordination necessary for responsive and synchronized MAGTF air operations. An organizational structure is required to meet the critical planning and executive decision points in support of the MAGTF's single battle concept.

Through top down guidance (mission and intent), the MAGTF commander focuses the efforts of all MAGTF assets in complementary operations toward a common objective as shown in figure 1-2.



**Figure 1-2. MAGTF Single Battle Concept.**

This single battle concept is in keeping with the warfighting principle of unity of command and effort. It exploits the combined arms nature of MAGTF operations in concert with the principle of maneuver warfare to present the enemy with a dilemma: movement of forces to counter MAGTF maneuver will expose them to MAGTF fires and lack of movement for fear of losses to MAGTF fires will prevent them from countering MAGTF maneuver.

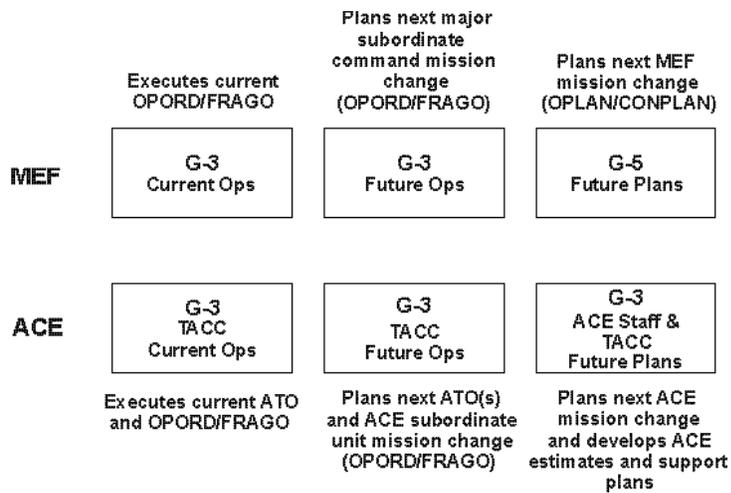
At each subordinate echelon, planning and execution must support the MAGTF commander's intent and concept of operations. This fundamental tenet of the MAGTF single battle drives the requirement for the TACC to be organized to ensure unity of effort in its internal planning and execution processes as well as to meet the battle rhythm of the MAGTF commander.

### **MEF-ACE STAFF ALIGNMENT**

The TACC enables the ACE staff to align functionally and organizationally with the MEF staff (see fig. 1-3, page 1-6). This facilitates inter-staff coordination, which is critical for effective planning and execution of MAGTF air operations. It allows the ACE to successfully accomplish the time-driven events necessitated by the joint air tasking cycle while satisfying the MEF's requirement of planning and executing toward an end state that is event driven.

Another key organizational tenet of the TACC is integrated staff planning. The principal staff sections are represented during all phases of the operational planning process. This allows the ACE

commander to develop a vision and concept of operations based on a balanced appraisal of each battlespace function.



**Figure 1-3. MEF-ACE Staff Alignment.**

## CENTRALIZED COMMAND AND DECENTRALIZED CONTROL

The TACC uses centralized command to establish priorities and ensure unity of effort of MAGTF air operations. The ACE's aviation assets are finite, and the air groups and squadrons will likely be located at several bases. Centralized planning and direction is essential for coordinating the efforts of all the ACE assets. Additionally, it allows for the optimum selection and coordination of units in time, space, and purpose to best meet the MAGTF commander's priorities. The TACC assumes several squadron or group

planning functions including weaponeering and force application decisions. With the codification of the joint force air component commander (JFACC) concept into joint doctrine, the ACE has altered its procedures to meet the established joint air tasking timeline. Squadron or group staffs are not manned nor do they have the requisite operational and intelligence information to conduct the level of synchronized detailed planning necessary within the mandated joint timelines.

While command is centralized for planning and execution within the TACC, control is decentralized for specific aviation functions to subordinate MACCS agencies to generate the tempo of operations required to cope with the uncertainty of combat operations. For example, the direct air support center (DASC) will control and allot aviation assets apportioned to the close fight and the tactical air support center (TAOC) will control assets apportioned to active air defense. The major exception to this tenet is the control of deep air support (DAS) missions forward of the fire support coordination line (FSCL) within the MAGTF area of operations. Because of the focus of the conduits of operational and intelligence information within the TACC, it is the MACCS agency most capable of synchronizing DAS missions beyond the FSCL with other MAGTF lethal and non-lethal assets.

TACC current ops will provide real-time air direction of aircraft prosecuting the MAGTF deep operations shaping campaign. This excludes air traffic control and ground control intercept operations. Air direction in the deep battle will be accomplished through a tactical air coordinator (airborne) (TAC[A]) who will function as an

extension of the TACC (an expansion of its current role as an extension of the DASC), in concert with an airborne radio relay if required.

### **MODULARITY AND SCALABILITY**

The TACC organizational structure is flexible to meet the requirements of the ACE commander across the range of potential military operations. All organizations within the TACC employ a cellular structure which is modular and scaleable. Modularity refers to the design of the cells as independent, interoperable sections that are arranged and, as required, rearranged to support one or several operations. Modularity allows the ACE commander to tailor the TACC (scalability) by adding or subtracting cells, or parts or size of cells, as the mission requires. For example, when performing humanitarian assistance operations, the deep and close battle cells would probably not be used. The airspace coordination cell may be the only current ops cell activated. While other cells may not be activated, some of their functions may be moved to other cells. In this example, the search and rescue (SAR) coordination cell may not be formed; however, some of its normal functions may be taken on by the airspace coordination cell. Interoperability is inherent in the design of the facility.

The baseline TACC organization presented in this handbook is designed to support a MEF. An ACE would possess the full spectrum of Marine aviation capabilities. The TACC would be necessarily robust, possessing all available functionality to plan and execute MAGTF air operations to influence the deep battle, support the close battle, and protect the rear area.

This baseline organization is capable of expansion or contraction based on the size and scope of the operation and the TACC's

intended role (see fig. 1-4). The factors which should be considered when determining the size of the TACC and its organizational structure include: mission, composition of forces, concept of operations, threat, area of operations, unity of command and control, and expected duration.

As these factors change, the size and internal organization of the TACC would be tailored to meet the requirement. A larger operation may require additional augmentees to bolster each cell.

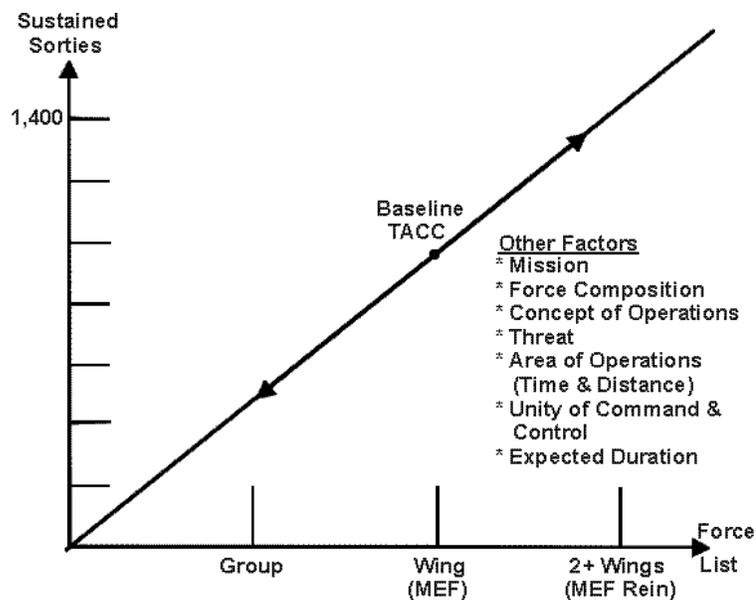


Figure 1-4. TACC Organization Scalability.

The TACC structure also allows flexibility in scaling for the ACE commander to assume the responsibilities of an interim or enabling JFACC. Liaison elements from other air capable components would be required to assist and coordinate the planning and execution of air operations. Another factor to consider is whether the ACE commander is also assigned the responsibilities of area air defense commander (AADC) and airspace control authority (ACA) possibly necessitating additional external augmentation.

## Chapter 2

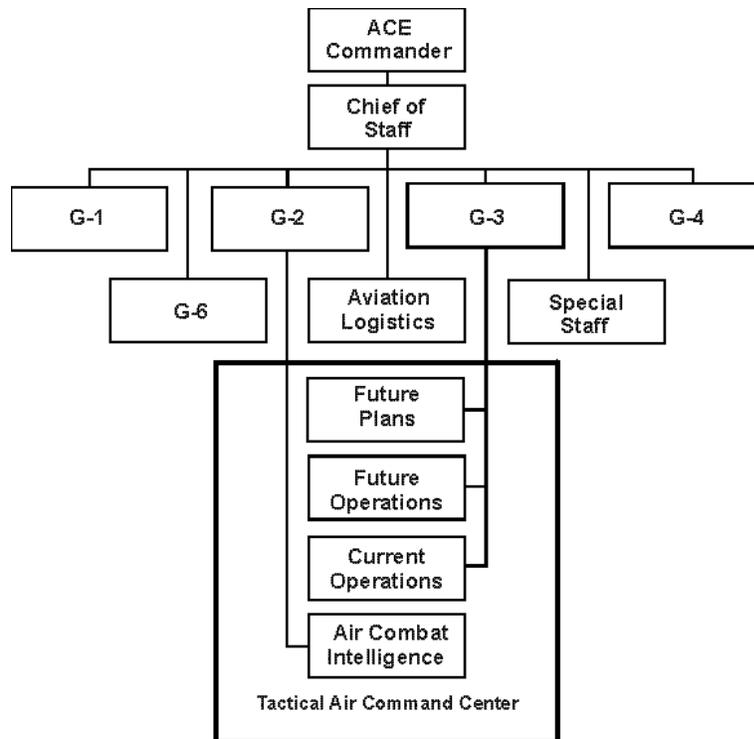
# Organization and Manning

The TACC consists of three mutually supporting, cross-functional operational organizations supported by a centralized intelligence organization. The TACC organizations and their relationship to the ACE battlestaff are shown in figure 2-1 on page 2-2. The TACC does not provide facilities for all ACE staff functions. It provides a facility from which the ACE commander and staff plan and execute MAGTF aviation and aviation support operations. TACC organizations are—

- | Future plans.
- | Future operations (future ops).
- | Current operations (current ops).
- | Air combat intelligence (ACI).

Future plans conducts aviation and aviation support planning for the next MEF mission change. Future ops develops future ATO(s) and prepares operation orders or fragmentary orders for the next ACE mission change. Current ops executes the daily ATO and assesses its effectiveness.

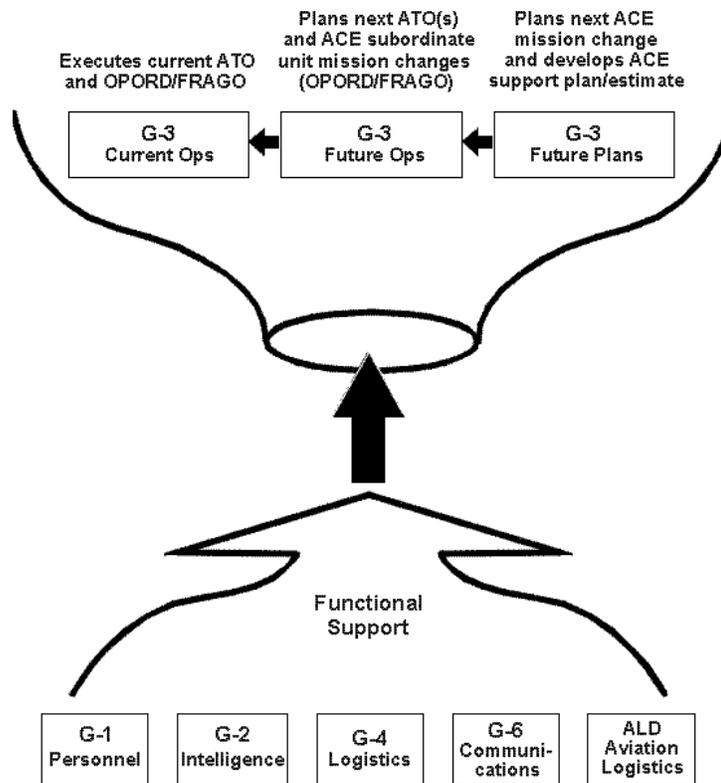
ACI is embedded within the TACC. Timely and tailored and fused intelligence is integral to the functioning of future plans, future ops, and current ops. ACI is the focus of all aviation intelligence activities supporting the ACE. It produces and disseminates aviation-specific all-source intelligence, to include assessments of adversary capabilities and vulnerabilities, target analysis, battle damage



**Figure 2-1. TACC Organizations and Command Relationships to the ACE Battlestaff.**

assessment (BDA), and the current status and priority of assigned targets to assist in execution day changes.

The principal staff sections (e.g., personnel, intelligence, logistics, communications) provide tailored staff support to the TACC, including appropriate full-time representation (via a matrix style structure) as required (fig. 2-2). This cross-functional representation



**Figure 2-2. ACE Staff Organization.**

within future plans, future ops, and current ops facilitates a fully integrated plan from conception to execution.

The ACE G-3 is the direct representative of the ACE commander in the TACC. The ACE G-3 is responsible for the execution of the current ACE OPORD or FRAGO and the overall functioning of future plans, future ops, and current ops in the planning and execution of

all ATOs. The ACE G-2 has staff cognizance over all ACE intelligence activities including ACI and the intelligence watch sections in future ops and current ops. The other principal staff officers maintain cognizance over their respective sections including their representatives within each operational cell and provide support from a common functional perspective.

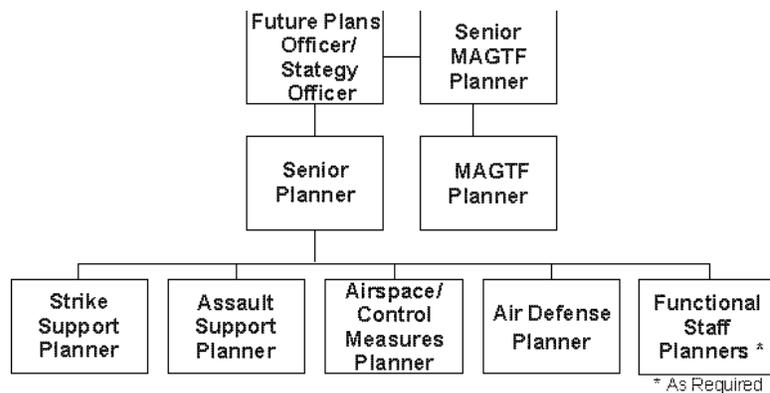
The TACC must be staffed adequately to fulfill all of the ACE commander's responsibilities, as well as permit continuous operations. The nucleus of required expertise to operate and maintain the TACC is provided by the ACE headquarters staff, the Marine air control group (MACG), and selected augments from subordinate aviation units. Additional augmentees may be required based on the composition of the ACE and the scope of its mission. Liaison personnel from other services and allied nations may also augment the TACC to facilitate coordination in joint and multinational operations. See appendices A and B for manning requirements for a baseline TACC and augmentees and liaison personnel.

## Section I

# Future Plans

Future plans consists of a number of aviation personnel tasked to provide estimates of supportability and support plans for the next MAGTF mission change. Cross functional staff representation will expand future ops to provide expertise for planning functions. This integrated planning effort provides credible, expedient, and synergistically developed input into the planning process.

Future plans is comprised of personnel from the ACE staff built around a nucleus of MOS credible aviation planners. Functional staff representation is provided, as required, to facilitate planning. Future plans is structured around a single watch section. The future plans officer may need to shift personnel to meet planning, decision, execution, and assessment (PDE&A) timelines for the delivery of required support planning products. Future plans is organized as shown in figure 2-3.



**Figure 2-3. Future Plans.**

## MISSION AND FUNCTIONS

Future plans is responsible to the ACE G-3 for aviation planning in support of the next MEF mission change. Future plans will—

- 1 Maintain close and continuous liaison with MAGTF future plans.
- 1 Conduct deliberate planning for MAGTF operation plans (OPLANs) and follow-on MAGTF missions associated with the current operation.
- 1 Develop aviation courses of action (COAs) for each follow-on MAGTF mission under development.
- 1 Develop ACE estimates of supportability for each follow-on MAGTF mission under development.
- 1 Develop and refine OPLANs or OPORDs associated with each follow-on MAGTF mission.
- 1 Provide detailed and fully integrated deployment, employment, mobilization, and sustainment plans for follow-on MAGTF missions.
- 1 Prepare necessary briefs for COA and/or supportability decision briefs.
- 1 Assist future ops, as required, after the ACE support plan is transitioned to the operational planning team (OPT) for OPORD or FRAGO detailed preparation.

## BILLET DESCRIPTIONS

### Future Plans Officer

The future plans officer is directly responsible to the ACE G-3 for the overall direction and supervision of future plans. The future plans officer will function as the ACE strategy officer. The future plans officer will—

- | Supervise the preparation and setup of future plans.
- | Develop aviation strategy for the ACE.
- | Provide aviation plans and/or estimates of supportability to the MEF future plans section.
- | Develop ACE planning milestones.
- | Coordinate ACE staff inputs to the planning process.
- | Conduct necessary liaison with higher, adjacent, and subordinate commands to ensure planning accuracy and timeliness.
- | Conduct required plans briefs for the ACE commander and battlestaff.
- | Provide tailored personnel support, as directed by the ACE G-3, to assist the future ops orders development section in OPORD or FRAGO preparations.

### Senior Planner

The senior planner acts as the planning assistant to the future plans officer. The senior planner will—

- | Develop ACE COA and/or estimates of supportability for each follow-on MAGTF mission under development.

- 1 Manage the future plans staff and ensure milestones issued by the future plans officer/strategy officer are completed in a timely manner.
- 1 Review planning inputs received from future plans representatives to ensure accuracy and synergy.
- 1 Monitor, collect, and collate future plans inputs to each mission plan.
- 1 Prepare required operations and supporting plans.
- 1 Act as the senior aviation planner if the future plans officer/strategy officer is not an aviator.

### **Airspace Control Measures Planner**

The airspace control measures planner is responsible to the future plans officer for developing airspace control measures associated with each MAGTF mission plan under development. The airspace control measures planner will—

- 1 Develop airspace or control concepts necessary to ensure positive and/or procedural control of aviation assets.
- 1 Identify and rectify possible conflicts associated with needed or planned control measures and schemes of maneuver within each COA under development.
- 1 Coordinate with the MACG and the future plans communications and information systems connectivity planner to ensure that each COA is supportable.
- 1 Identify and report the pros and cons of airspace control for each COA developed during mission planning to the senior planner.

- | Act as the primary liaison with the MAGTF future plans, the joint air operations center, combat plans, air strategy cell, and the MACG in matters pertaining to airspace control planning.
- | Assist the ACA in the development of the ACP.

### **Air Defense Planner**

The air defense planner is responsible to the future plans officer for developing air defense plans associated with each MAGTF mission plan under development. The air defense planner will—

- | Develop air defense concepts necessary to ensure positive and/ or procedural control of air defense assets.
- | Identify and rectify possible conflicts associated with needed or planned control measures and schemes of maneuver within each COA under development.
- | Coordinate with the Marine air control group and the future plans communications and information systems connectivity planner to ensure each COA is supportable.
- | Identify and report the pros and cons of air defense for each COA developed during mission planning to the senior planner.
- | Act as the primary liaison with the Marine air-ground task force's future plans, the joint force air component commander's combat plans air strategy and air defense cells, and the Marine air control group in matters pertaining to air defense planning.

### **Assault Support Planner**

The assault support planner is responsible to the future plans officer for developing all support aviation plans and estimates of supportability associated with each MEF mission plan under development. The assault support planner will—

- 1 Develop aviation plans associated with assault support and general aviation support including helicopterborne operations, tanker support, and unmanned aerial vehicle (UAV) use.
- 1 Identify and rectify possible conflicts associated with assault support and general aviation support availability and the schemes of maneuver within each COA under development.
- 1 Identify and report assault support and general aviation support pros and cons for each COA developed during mission planning to the senior planner.
- 1 Coordinate with cognizant Marine aircraft groups (MAGs), air-space planner, and the future plans staff to ensure each COA is supportable in terms of deconfliction and support required.
- 1 Act as the primary liaison between future plans and the MAGTF future plans in matters pertaining to helicopterborne and general aviation support operations.

### **Strike Support Planner**

The strike support planner is responsible to the future plans officer for developing strike aviation plans/estimates of supportability associated with each MAGTF mission plan under development. The strike support planner will—

- 1 Develop aviation plans associated with air interdiction (AI), offensive anti-air warfare (OAAW), close air support (CAS),

UAV use (in conjunction with ACI), and tactical aviation support.

- 1 Identify and rectify possible conflicts associated with strike aviation support availability and the schemes of maneuver within each COA under development.
- 1 Identify and report strike aviation support pros and cons for each COA developed during mission planning to the senior planner.
- 1 Coordinate with cognizant MAGs, airspace planner, and the future plans staff to ensure each COA is supportable in terms of deconfliction and support required.
- 1 Act as the primary liaison between future plans and the MAGTF future plans in matters pertaining to AI, OAAW, and CAS operations.

### Functional Staff Planners

**Intelligence Planner.** The intelligence planner is the primary liaison between future plans and the ACE G-2. The intelligence planner will—

- 1 Prepare intelligence annexes and estimates for operations and supporting plans developed by future plans.
- 1 Provide future plans intelligence updates and estimates throughout the mission planning cycle.
- 1 Produce, collate, and submit priority intelligence requirements (PIRs) needed by future plans for mission planning.
- 1 Provide the ACE G-2 with periodic COA and mission briefs to allow them to prepare for upcoming mission changes.
- 1 Provide the future plans officer/strategy officer and senior planner updated intelligence asset availability and status.

- | Maintain and update the current and projected enemy situation in future plans.
- | Prepare and deliver the intelligence portion of briefs provided to the ACE commander and ACE battlestaff by future plans.

**Logistics Planner.** The logistics planner is the primary liaison between future plans and the ACE G-4. The logistics planner will—

- | Prepare logistics annexes for operations and supporting plans developed by future plans.
- | Develop logistics estimates of supportability for all COA provided by the MAGTF future plans.
- | Populate and maintain automated logistics data bases within applicable systems (e.g., CTAPS, TBMCS) for use within future plans.
- | Provide the ACE G-4 with periodic COA and mission briefs to allow them to prepare for upcoming mission changes.
- | Prepare and deliver the logistics portion of all briefs provided to the ACE commander and ACE battlestaff by future plans.

**Aviation Support Planner.** The aviation support planner is the primary liaison between future plans and ACE ALD. The aviation support planner will—

- | Prepare aviation logistics annexes for all operations and supporting plans developed by future plans.
- | Develop all aviation logistics estimates of supportability for all COAs provided by the MAGTF future plans.
- | Populate and maintain automated aviation logistics data bases within applicable systems (e.g., CTAPS, TBMCS) for use within future plans.

- | Provide ALD with periodic COA and mission briefs to allow them to prepare for upcoming mission changes.
- | Prepare and deliver the aviation logistics portion of all briefs provided to the CG and ACE battlestaff by future plans.

**Communications and Information Systems Connectivity Planner.** The communications and information systems connectivity planner is the primary liaison between future plans and the ACE G-6. The communications and information systems connectivity planner will—

- | Prepare communications and connectivity annexes for operations and supporting plans developed by future plans.
- | Assist the airspace/control measures planner in developing necessary connectivity framework to ensure that a robust command and control network can be established for mission plans.
- | Develop command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) estimates of supportability for all COA provided by the MAGTF future plans.
- | Populate and maintain automated C4ISR data bases within applicable systems (e.g., CTAPS, TBMCS) for use within future plans.
- | Provide the ACE G-6 with periodic COA and mission briefs to allow them to prepare for upcoming mission changes.

**Ordnance Planner.** The ordnance planner is the primary liaison between future plans and ACE ALD ordnance. The ordnance planner will—

- 1 Assist the aviation support planner in preparing aviation logistics annexes (relating to aviation ordnance) for operations and supporting plans developed by future plans.
- 1 Develop aviation ordnance estimates of supportability for COA provided by the MAGTF future plans.
- 1 Assist to populate and maintain automated aviation ordnance data bases within applicable systems (e.g., CTAPS, TBMCS) for use within future plans.
- 1 Assist the aviation support plan in providing ALD with periodic COA and mission briefs to allow them to prepare for upcoming mission changes.
- 1 Assist the aviation support planner in preparing the aviation logistics portion of all briefs provided to the ACE commander and ACE battlestaff by future plans.

**Embarkation Planner.** The embarkation planner is the primary liaison between future plans and ACE G-4 embarkation. The embarkation planner will—

- 1 Assist the logistics planner in preparing logistics annexes (relating to embarkation and movement of personnel, material, and supply) for operations and supporting plans developed by future plans.
- 1 Develop embarkation estimates of supportability for COA provided by the MAGTF future plans.
- 1 Populate and maintain automated embarkation data bases (e.g., aviation, shipping, amphibian) within applicable systems (e.g., MAGTF II) for use within future plans.

- | Assist the logistics planner in providing the G-4 with periodic COA and mission briefs to allow them to prepare for upcoming mission changes. Assist the logistics planner in preparing the logistics (embarkation) portion of briefs provided to the ACE commander and ACE battlestaff by future plans.
- | Collate and prepare load plans required for movement of ACE forces in support of mission plans developed.

### **Senior MAGTF Planner**

The senior MAGTF planner is responsible to the future plans officer for matters relating to planning administration and systems maintenance. The senior MAGTF planner will—

- | Use and manage the Global Command and Control System (GCCS).
- | Develop, refine, and manage the time-phased force and deployment data (TPFDD).
- | Produce, maintain, and update friendly dispositions (current and projected) using standard military symbols, tactical maps, and charts associated with the theater of operations and used by future plans for planning purposes.
- | Type, reproduce, and disseminate all briefs, operations orders, operations plans, supporting plans, and estimates of supportability produced by future plans.
- | Populate and maintain automated data bases and briefing charts within applicable systems (e.g., MAGTF II, CTAPS, TBMCS) for use within future plans.
- | Provide general support to future plans.
- | Manage assigned MAGTF planners.

- | Report all problems relating to equipment, communications, and personnel to the future plans officer.

### **MAGTF Planners**

MAGTF planners are responsible to the future plans officer for all administrative and communications functions associated with future plans. MAGTF planners will—

- | Use and manage GCCS.
- | Develop, refine, and manage the TPFDD.
- | Produce, maintain, and update friendly dispositions (current and projected) using standard military symbols, tactical maps, and charts associated with the theater of operations and used by the future plans staff for planning purposes.
- | Type, reproduce, and disseminate briefs, operations orders, operations plans, supporting plans, and estimates of supportability produced by future plans.
- | Populate and maintain automated data bases within applicable systems (e.g., MAGTF II, CTAPS, TBMCS) for use within future plans.
- | Provide general administrative support to future plans.
- | Maintain communications with higher, adjacent, and subordinate commands using all available communications and dissemination equipment.

### LAYOUT

The future plans layout is shown in figure 2-4.

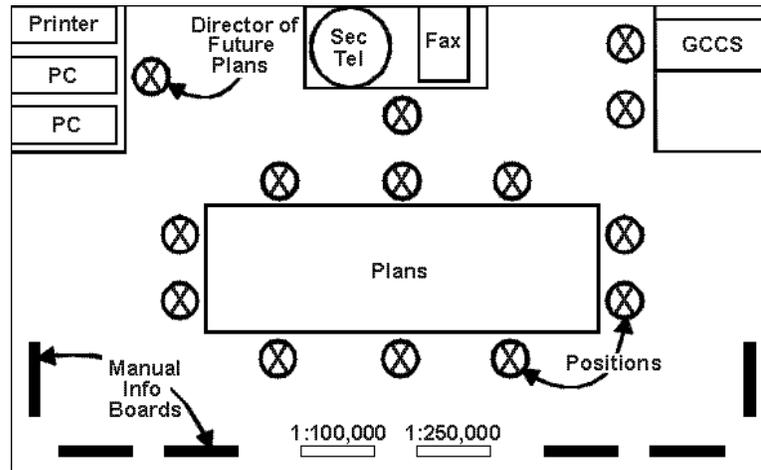


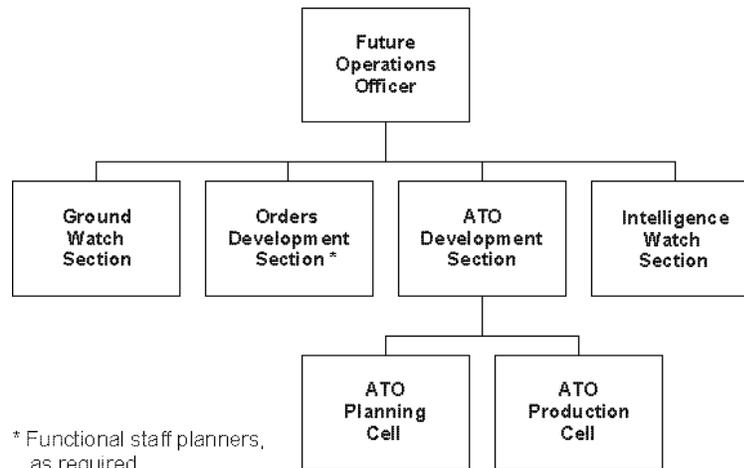
Figure 2-4. Future Plans Layout.

## Section II

# Future Operations

### ORGANIZATION AND MANNING

Future ops is comprised of personnel from the ACE staff, MACG, Marine tactical air command squadron (MTACS), as well as MAG (aircraft type, model, and series) representation. The MAGTF G-3 provides the personnel for the ground watch section. Of note is the requirement for rank representative, MOS credible, and fleet seasoned aviators to plan aviation events. Functional staff representation is provided, as required, to facilitate planning. Future ops is organized as shown in figure 2-5.



**Figure 2-5. Future Operations.**

While not structured for two watch sections, the PDE&A timeline may require shifting personnel to meet critical events during the day (e.g., ATO planning, ATO electronic build, ATO quality control review, ATO merge, orders development, orders review, orders release). The cell leaders will structure their personnel to meet critical PDE&A points during the 24-hour day.

### **CONCEPT OF ORGANIZATION**

Similar to future plans, future ops is organized along a cellular structure with a nucleus of aviators, ground and intelligence personnel, and system operators. As required, cross functional staff/MAG representation will expand future ops to provide expertise for planning functions. These integrated planning cells provide credible, expedient, and synergistically developed input to the orders preparation process.

### **MISSION AND FUNCTIONS**

Future ops is responsible to the ACE G-3 for developing future MEF ATOs, writing the OPORD or FRAGO for the next ACE mission change, and conducting current planning. Future ops will—

- 1 Maintain close and continuous liaison with MAGTF future ops, force fires, and the joint air operations center (JAOC) combat plans division.
- 1 Plan and produce the next ATO(s) using approved planning guidance.
- 1 Develop ACE OPORDs or FRAGOs based on ACE support plans prepared by future plans.
- 1 Administer the ACE targeting board, as required.

- | Formulate current plans outside the ATO cycle, but still within the current OPORD or FRAGO.
- | Plan and coordinate changes to the airspace control plan (ACP), airspace control order (ACO), and air defense plan (ADP).
- | Develop the ACE's air apportionment recommendation.
- | Direct, coordinate, and supervise the development and forwarding of the ACE commander's critical information requirements (CCIRs).
- | Provide the nucleus for the ACE OPT.

## **BILLET DESCRIPTIONS**

### **Future Operations Officer**

The future ops officer is directly responsible to the ACE G-3 for the overall direction and supervision of future ops. The future ops officer will—

- | Draft preliminary targeting guidance for presentation to the ACE targeting board when the ACE is employed as a maneuver unit.
- | Supervise the preparation and setup of future ops.
- | Issue the approved planning guidance and direct and monitor development of the ATO based on that guidance.
- | Develop the ACE master air attack plan (MAAP).
- | Prepare the allocation request (ALLOREQ) and air support request (AIRSUPREQ) messages, as required.
- | Prepare the sortie allotment (SORTIEALOT) message (if JFACC).

- | Develop the ACE apportionment recommendation.
- | Review the results of previous air operations and ensure that applicable tactics or procedures are developed as the dynamic combat situation requires (combat assessment).
- | Consult with the current ops officer to determine significant problems in managing the current ATO to improve the quality and effectiveness of future ATO tasking.
- | Prepare reports from future ops for the commander's situation report and commander's daily briefing and as directed by the ACE G-3.
- | Ensure that backup procedures are prepared and can be implemented rapidly if automated planning systems fail.
- | Attend briefings to the ACE commander and ACE G-3 concerning upcoming operations about to be put into an ATO.
- | Keep future ops informed of the JFC/MAGTF/ACE commander's guidance, intent, and objectives.
- | Attend meetings as required and provide input into the ACE support plan being developed by future plans.
- | Receive (transition) the developed ACE support plan and provide direction to the orders development section to standup an OPT to prepare a detailed ACE OPORD or FRAGO.

### **Assistant Future Operations Officer**

The assistant future ops officer is responsible for the internal functioning of future ops in accordance with the future ops officer's guidance and direction. The assistant future ops officer will be prepared to assume all duties of the future ops officer when required.

### **Operations Administration Section**

The operations administration section is responsible for providing administrative support to future ops. It will—

- 1 Receive and distribute all incoming messages and reports.
- 1 Maintain and distribute classified material as required.
- 1 Coordinate the collection of all future operations data for reporting purposes (e.g., commander's situation report, sortie allocation).
- 1 Ensure any messages required for immediate release are drafted and presented to the ACE G-3 administration section.
- 1 Provide general administrative support to future ops.

### **Ground Watch Section**

The ground watch section is comprised of representatives from the MAGTF and ground combat elements (GCEs). The ground watch section will—

- 1 Monitor and interpret future MAGTF battle plans for future ops.
- 1 Maintain the current and future friendly ground situation displays/maps including planned fire support coordination measures.
- 1 Assist in interpreting the MAGTF commander's guidance and intent for aviation planning purposes.
- 1 Coordinate and deconflict (as required) ground maneuver, and supporting arms with planned air operations beyond the FSCL.

## Intelligence Watch Section

The intelligence watch section is responsible for receiving, processing, and disseminating pertinent intelligence on the current and future enemy situation to future ops. The intelligence watch section will—

- 1 Serve as the primary interface between the ACE G-2 and future ops.
- 1 Maintain a display of the current and future enemy situation to include target locations and priorities.
- 1 Review all incoming intelligence reports for significant developments, specific threat changes, and trends in the current situation which could affect future enemy capabilities and courses of action.
- 1 Brief the future ops officer on significant changes to the current enemy situation and any developments which will have an effect on future enemy courses of action.
- 1 Coordinate with the ACI collections section for the development of intelligence collection plans to support ACE operations and ATO development in planning.
- 1 Advise future ops on—
  - n Projected enemy capabilities.
  - n Projected enemy critical vulnerabilities.
  - n Potential enemy courses of action.
  - n MAGTF surveillance and target acquisition capabilities.
  - n The current and future ACE intelligence collection plan.
- 1 Participate in the intelligence preparation of the battlefield (IPB) process to help determine named areas of interest, target areas of interest, and decision points.

- 1 Conduct situation update briefings for future ops and visitors as required.
- 1 Prioritize, collate, and forward requests for information from future ops to the ACI requirements and dissemination section for action.
- 1 Coordinate with the ACI intelligence analysis section for the projected enemy battlefield situation.
- 1 Coordinate with the ACI target development cell to develop a target list to be weaponeered by the strike planners.
- 1 Coordinate with the ACI BDA cell to provide status of previously scheduled targets and participate as a member on the combat assessment board for target resubmission.

### **ATO Development Section**

The ATO development section is responsible for ATO planning, production, and dissemination in support of MAGTF air operations as well as identifying MAGTF targets for common sourcing. It is comprised of the ATO planning cell and ATO production cell.

**ATO Development Officer.** The ATO development officer is responsible to the future ops officer for overseeing the ATO planning and ATO production cells. The ATO development officer will—

- 1 Receive, interpret, and disseminate direction from the future ops officer.
- 1 Produce a timely and executable ATO.
- 1 Ensure aviation and intelligence data bases required for ATO planning and production are current and accurate.

- | Coordinate with the deep battle cell and close battle cell in current ops to ensure accuracy of the published ATO.
- | Coordinate with the senior watch officer (SWO) in current ops to ensure timely receipt of current battle information and changes to the ATO being executed that could affect the ATO(s) under development.
- | Maintain contact with the ACE augmentation cell in the JAOC combat plans division.
- | Provide output from the combat assessment board to the MAGTF air officer and JAOC combat plans division.
- | Head the combat assessment board with BDA input from the ACE target intelligence officer and munitions effectiveness or strike profiles provided by the flying units. The combat assessment board is designed to—
  - n Provide recommended process improvements in tactics, techniques, procedures, ordnance, countermeasures equipment, expendables, etc.
  - n Share outputs with all other units in the joint or combined effort through the operational chain of command.
  - n Stimulate government labs, industry, and procurement process into the rapid solution to critical problems.

The combat assessment board draws input from two sources and—

- | Receives an intelligence assessment from the target intelligence officer in the form of BDA inputs.
- | Receives operational inputs from the flying units describing munitions effectiveness, strike profile effectiveness, tactics effectiveness, countermeasures equipment, expendables effectiveness, etc.

**ATO Planning Cell.** The ATO planning cell is responsible for performing weaponeering and force application functions in the development of the MAGTF master attack plan (MAP). The ATO planning cell will—

- 1 Receive and review the MAGTF MAP.
- 1 Prepare the ACE MAP to include—
  - n Sequencing and deconflicting apportioned air assets against the MAGTF prioritized target list.
  - n Weaponeering and packaging air assets, as required, based on the threat, desired level of destruction, and timeliness.
  - n Deconflicting simultaneous missions by other MAGTF lethal or nonlethal assets.
- 1 Prepare sortie available charts.
- 1 Prepare aircraft flow sheets.
- 1 Separate the MAGTF prioritized target list (for submission to the JFC) to show direct support and common sourced targets.
- 1 Review and input any data base changes to the aircraft laydown, standard configured loads (SCLs), and aircraft parametric data.
- 1 Prepare the target planning worksheets and pass them to the ATO production cell for input into the applicable electronic planning system.
- 1 Prepare the special instructions (SPINS) and any changes to air-space control plan (ACP) and ADP for incorporation into the ATO.
- 1 Perform a final review of the ATO before release or forwarding.

- | Ensure that sortie available aircraft flow and target planning worksheets, as applicable, are forwarded to the Marine liaison cell in the JAOC combat plans division.
- | Make adjustments to force packaging, routing, weapons loadout, aircraft survivability equipment (ASE) configurations, or other tactics resulting from the combat assessment board analysis.

**ATO Production Cell.** The ATO production cell is responsible for the technical construction and dissemination of the ATO, SPINS, and ACP/ACO/ADP inputs. The ATO production cell will—

- | Receive and review the target planning worksheets from the ATO planning cell and input listed targets into the applicable electronic planning medium.
- | Prepare ATO, SPINS, ACP, ACO, and ADP changes in accordance with the information, data, and guidance provided by the ATO planning cell.
- | Print and deliver draft copies of the ATO for review by the ATO planning cell prior to release or forwarding.
- | Maintain electronic connectivity with the JFACC for the submission of common sourced target nominations and the merging of the MAGTF direct support ATO into the joint ATO.
- | Publish and transmit the ATO to higher, adjacent, and subordinate commands using available electronic means in accordance with the dissemination plan.
- | Monitor the status of the theater directed electronic planning and execution medium associated equipment to identify maintenance requirements and equipment problems.

## Orders Development Section

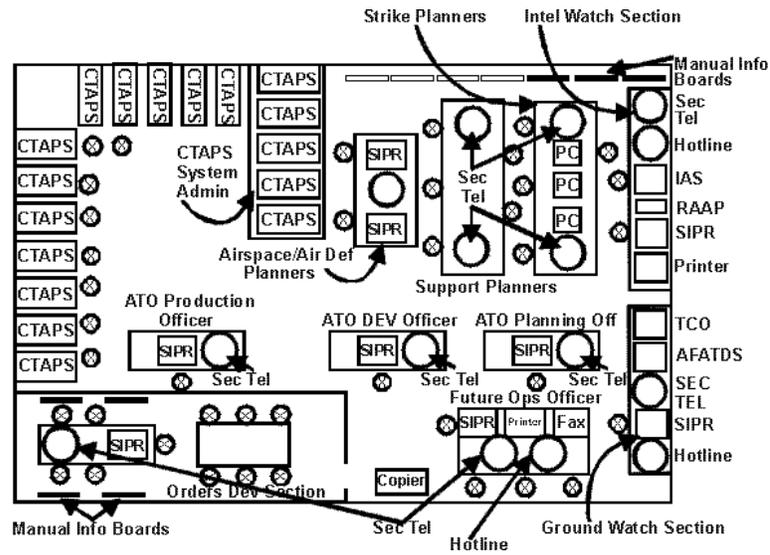
The orders development section is responsible for developing ACE OPORDs or FRAGOs and conducting current planning for aviation requirements that occur beyond the ATO currently being planned but short of the next FRAGO being developed.

**Orders Development Officer.** The orders development officer is responsible to the future ops officer for overseeing the orders development and current planning process. The orders development officer will—

- 1 Stand up and direct the ACE OPT.
- 1 Develop ACE OPORDs or FRAGOs based on ACE support plans prepared by future plans.
- 1 Plan and coordinate large-scale helicopter operations (taskings, routes, escort), projected strike packages, combat search and rescue (CSAR), tactical recovery of aircraft and personnel (TRAP), combat air patrol (CAP), suppression of enemy air defenses (SEAD), air command and control functions, and aviation support requirements to meet planned aviation needs beyond the ATO timeline but short of the next significant change to the major subordinate command (MSC) mission being developed by future plans.
- 1 Assist with functions required to meet ATO timelines.
- 1 Coordinate continuously with the ATO development officer and the future ops officer about orders development and near-term plans and requirements.
- 1 Prepare plans associated with reorganization, liaison and augmentation, and connectivity required to assume JFACC/JAOC responsibilities, as required.

### LAYOUT

The future ops layout is shown in figure 2-6.



**Figure 2-6. Future Ops Layout.**

## Section III

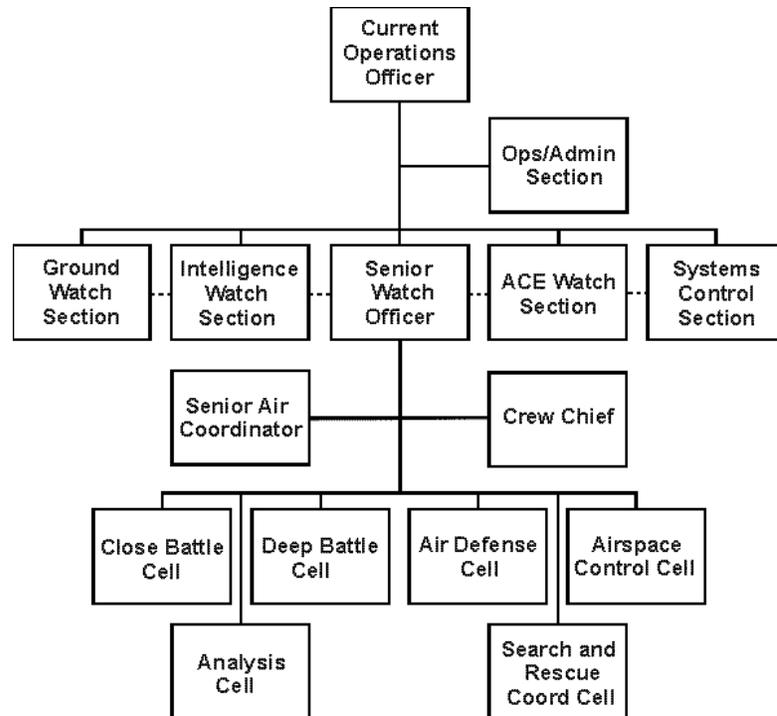
# Current Operations

### ORGANIZATION AND MANNING

Current ops is comprised of personnel from the ACE staff, the MACG, the subordinate MTACS, and subordinate aviation groups or squadrons. Pilots and naval flight officers, as required, will be drawn from MAGs to fill critical billets which require the expertise of a Marine aviator or naval flight officer. The MAGTF G-3 provides the personnel for the ground watch section. Current ops must be manned with sufficient personnel to maintain sustained 24-hour operations. This normally requires a minimum of two 12-hour watch sections. Current ops is organized as shown in figure 2-7.

### CONCEPT OF ORGANIZATION

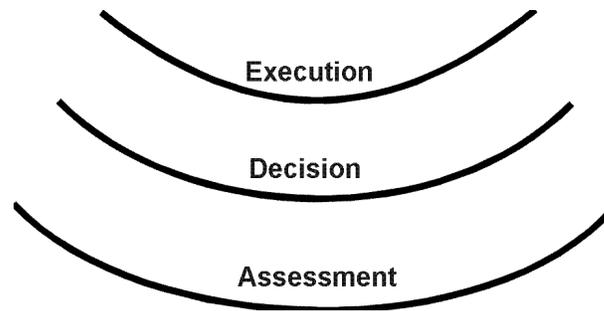
Current ops is organized by sections divided into cells to promote the rapid distribution of relevant information necessary to make sound decisions in a fluid battlefield environment. Each cell has clearly defined tasks and is given the latitude to interact freely as necessary with other cells whose knowledge and expertise is required for the situation at hand. The goal is to compress the time needed to make decisions and coordinate execution. This lateral coordination among cells improves operational tempo by fostering the unrestrained flow of information and allowing multiple cells to simultaneously work different issues. As a result, the time needed to make meaningful decisions and coordinate execution is shortened. The ACE can gain an advantage by cycling through their OODA



**Figure 2-7. Current Ops.**

(observe, orient, decide, act) loop process faster than an adversary can cycle through theirs.

To ensure timely and accurate assessment, decisionmaking, and execution, current ops is arrayed into three concentric bands. Cells principally tied by purpose and focus are placed where interaction is facilitated to accomplish their assigned functions rapidly and synergistically (see figure 2-8 on page 2-32).



**Figure 2-8. Current Ops Concept of Organization.**

The outer ring consists of cells that monitor, analyze, and assess battlespace functions. Cells lend credible, expedient, and synergistically developed input to assist the decisionmaking process. These cells receive information from other cells within current ops as well as from the ACE principal staff sections, and higher, adjacent, and subordinate units. Information is evaluated, analyzed, fused, and interpreted with the end result being timely, well-developed knowledge presented to decisionmakers, along with recommended courses of action, if required.

The middle ring consists of decisionmakers (i.e., the current ops officer [the direct representative of the G-3 responsible for executing current operations] and the SWO [the senior watchstander who continuously directs the execution of the current ATO]). The decisionmaker selects a course of action from the options presented by the outer ring based on a detailed understanding of the MAGTF and ACE commanders' guidance (mission and intent) and directs the applicable execution cell to implement it. The decisionmaker supervises to ensure proper execution but does not get involved in the details of execution unless it is warranted by the situation. By doing so, the decisionmaker will be able to maintain better overall current

situational awareness which will assist in making more informed subsequent decisions.

The inner ring consists of cells that are task-organized to fully implement the six functions of Marine aviation through direct connectivity to higher, adjacent, and subordinate commanders or agencies. Usually, one cell is given the lead for the execution of a specific action, and that cell is responsible for coordinating and deconflicting associated actions with other cells or agencies, as required, during the implementation process. The lead cell is also responsible for providing timely feedback to decisionmakers and applicable assessment cells or agencies, which will reinitiate the process if required.

A key tenet of the cellular organization is the separation of the assessment and execution processes. The assessment cell is focused on monitoring and analyzing the effectiveness of the current ATO as a whole, and not on the details of individual event execution. This separation facilitates an ability to more broadly view the total situation and effect the necessary coordination with other cells, resulting in more meaningful information being provided to decisionmakers. Conversely, by not having to piece together disparate information to provide a current assessment to decisionmakers, execution cells can work out the details of the execution, using their experience and judgment to organize resources and direct aircraft or system employment.

## MISSION AND FUNCTIONS

Current ops is responsible to the ACE G-3 for the overall operations of the wing to include executing the current ACE OPORD or FRAGO and executing the daily ATO and assessing its effectiveness. Current ops will—

- 1 Maintain close and continuous liaison with MEF current ops and JAOC combat operations division.
- 1 Manage the execution of the ACE OPORD or FRAGO
- 1 Manage the execution of the current ATO.
- 1 Assess and adjust current ACE operations based on changes in MAGTF guidance or the status of friendly and enemy forces situation.
- 1 Analyze and interpret battlespace events as they relate to MAGTF air operations.

## BILLET DESCRIPTIONS

### Tactical Air Commander

The MAGTF tactical air commander (TAC) is the ACE commander or in his absence, his designated representative (e.g., assistant wing commander [AWC], chief of staff [C/S], or the AC/S G-3).

### **Current Operations Officer**

The current ops officer is directly responsible to the ACE G-3 for the overall direction and supervision of current ops. The current ops officer will—

- | Supervise preparation and setup of current ops.
- | Execute the current OPORD or FRAGO.
- | Execute the ATO.
- | Provide the future ops officer with a summary of significant problems encountered in executing the current ATO to improve the quality and effectiveness of future ATO tasking.
- | Prepare reports from current operations for the commander's situation report, commander's daily briefing, and as directed by the ACE G-3.
- | Ensure that backup procedures are prepared and can be implemented rapidly if automated support systems fail.
- | Attend briefings to the ACE commander and G-3 concerning upcoming operations about to be put into an ATO.
- | Keep current ops informed of the JFC/JFACC/MAGTF/ACE commander's guidance, intent, and objectives.

### **Assistant Current Operations Officer**

The assistant current ops officer is responsible for the internal functioning of current ops in accordance with the current ops officer's guidance and direction. The assistant current ops officer will be prepared to assume all duties of the current ops officer when required.

### **Operations Administration Section**

The operations administration section (ops admin section) is responsible for the administrative functioning of current ops. The ops admin section will—

- 1 Receive and distribute all incoming messages and reports.
- 1 Maintain and distribute classified material as required.
- 1 Coordinate the collection of all data for reporting purposes (e.g., commander's situation report, sortie allocation).
- 1 Ensure any messages required for immediate release are drafted and presented to the G-3 administration section.
- 1 Maintain the operations journal and journal file.

### **Systems Control Section**

The systems control section (SYSCON) is responsible for monitoring all ACE communication circuits including data networks, radio networks, switched voice networks, and is the focal point for conducting restoration efforts for networks, systems, and links. The SYSCON is comprised of technicians that control the entire ACE communications requirements. The SYSCON coordinates with the current operations officer to ensure communications and systems availability. Systems maintenance (CTAPS/TBMCS, GCCS, IAS, and TCO) are the responsibilities of the system administrators from

the G-2, G-3, and MTACS. System administrators work with the SYSCON to resolve communication and system outages. For all systems that terminate within the TACC, the C2 systems watch officer is the designated system administrator responsible for reporting system outages.

**C2 Systems Watch Officer (TACC Maintenance Coordinator).**

The C2 systems watch officer is an extension of the ACE G-6 and acts as the focal point for maintaining the TACC C4ISR system status and initiates restoration priorities of all circuits (e.g., radio, wire, tactical data networks, and multichannel radio) as the TACC maintenance coordinator (dual-tasked as the communications watch officer in the ACE watch section). The C2 systems watch officer will—

- | Supervise all communications personnel and system administrators assigned to the watch in radio central.
- | Maintain systems and circuit status within the TACC.
- | Submit circuit status reports to the ACE G-6 and the operational systems control center, as required.
- | Receive system outage or degradation reports by TACC operators and initiate trouble call reporting for circuit or systems restoration action.
- | Install and restore circuits in accordance with the established restoration plan.
- | Coordinate circuit preemption with all concerned agencies.
- | Monitor the progress of equipment under repair by the maintenance troubleshooting team.
- | Keep the current ops officer, future ops officer, and/or SWO apprised of any system degradation/outage and ongoing restoration efforts.

- | Keep the G-6 and SYSCON appraised of any emergent current ops communications issue.

**Radio Central (TACC Techcon).** Radio central is the facility adjacent to current ops that is the terminus for single channel radio nets. When directed by the ACE SYSCON, it will coordinate or conduct radio or data circuit restoration. It will be manned by ACE communications or data personnel.

### **Ground Watch Section**

The ground watch section is responsible for providing updated friendly ground situation information. It is comprised of representatives from the MAGTF G-3. The ground watch section will—

- | Monitor and interpret the current friendly ground battle for current ops.
- | Maintain the friendly ground situation including current and planned fire support coordination measures.
- | Assist in interpreting the MAGTF commander's guidance and intent for current ops planning purposes.
- | Act as the conduit for the receipt of all MAGTF-approved, pre-planned requests for aviation support.
- | Deconflict (as required) ground maneuver and supporting arms with air operations beyond the FSCL.
- | Provide status on the air effort to the MAGTF current ops.
- | Coordinate changes to MAGTF targets and priorities with MEF force fires.
- | Advise current ops on restricted fire support control measures.

## Intelligence Watch Section

The intelligence watch section is responsible for receiving, processing, and disseminating current intelligence on the enemy situation to current ops. The intelligence watch section will—

- 1 | Serve as the primary interface between the ACE G-2 and current ops.
- 1 | Maintain a current display of the enemy situation including target locations and priorities.
- 1 | Review all incoming intelligence reports for significant developments, specific threat changes, and trends in the current situation.
- 1 | Brief current ops on significant changes to the current enemy situation and any developments which will have an effect on future enemy courses of action.
- 1 | Coordinate with the ACI collection section for the development of intelligence collection plans to support ACE operations and ATO execution.
- 1 | Prioritize, collate, and forward requests for information from current ops to the ACI requirements and disseminations section for action.
- 1 | Advise current ops on—
  - n | Enemy capabilities.
  - n | Enemy critical vulnerabilities.
  - n | Potential enemy courses of action.
  - n | MAGTF surveillance and target acquisition capabilities.
  - n | Current ACE intelligence collection plan.

- | Conduct informal situation update briefings for current ops and visitors.
- | Prepare reports from current ops for the command's intelligence summary as directed by the ACE G-2.
- | Ensure that when a high payoff target is identified, the deep battle cell is notified for possible immediate attack and the situation map and current activity logs are updated.
- | Act as the conduit for BDA reporting within current ops.
- | Provide initial analysis of perishable information and conduct limited indications and warning reporting within the ACE and to the MAGTF.
- | Ensure that current intelligence received through current ops is forwarded to ACI in a timely manner.
- | Coordinate with the ACI intelligence analysis section to ensure that current intelligence on the enemy situation is considered in order of battle data base maintenance and to verify that the latest order of battle assessment is available on the current situation displays.
- | Coordinate with the ACI target intelligence section on immediate target nominations and provide a recapitulation of targets struck and BDA when available.
- | Maintain current and forecasted weather information and maps for the entire theater.

### **ACE Watch Section**

The ACE watch section is responsible for monitoring ACE functions that are not directly related to aircraft employment and aircraft and missile control (i.e., current FRAGO or OPORD). It is an extension of the ACE staff principals physically located in current

ops. The ACE watch section is comprised of the communications watch office (dual tasked as the C2 systems section watch officer); logistics watch officer; aviation/ordnance watch officer; nuclear, biological, and chemical (NBC) watch officer; and force protection officer. Watchstanders ensure that taskings in the OPORD or FRAGO, but not ATO-related, are executed and monitored.

**Logistics Watch Officer.** The logistics watch officer is an extension of the ACE G-4 in current ops. The logistics watch officer will—

- | Maintain the status of the classes of supply.
- | Maintain the status of all combat engineering functions in support of the ACE (e.g., airfield, improvement, forward operating base [FOB] status, forward arming and refueling point [FARP] status).
- | Maintain status of Marine wing support squadrons (MWSSs) at each aircraft site.
- | Keep the current ops officer apprised of events/situations that will effect current operations.
- | Provide immediate feedback to the G-4 and Marine wing support group (MWSG) S-3 on any ACE logistics issues.

**Aviation Maintenance and Ordnance Watch Officer.** The aviation maintenance and ordnance watch officer is the direct representative of the ALD officer. The aviation maintenance and ordnance watch officer will—

- | Maintain status of all assigned type, model, and series (T/M/S) aircraft in theater or enroute.

- | Maintain status of all ordnance (by type and base) and provide the information through the current ops officer to the deep battle cell and close battle cell, as required.
- | Provide any changes of status that will affect events in planning to the ALD ordnance representative in future ops.
- | Relay any changes in status of aircraft or ordnance to the ALD ordnance section.

**Nuclear, Biological, and Chemical (NBC) Watch Officer.** The NBC watch officer is the senior NBC representative for the ACE G-3. The NBC watch officer will—

- | Maintain mission-oriented protective posture (MOPP) status on all ACE sites and report changes to the current ops officer.
- | Provide changes to MOPP via established nets.
- | Establish passive NBC protective measures.
- | Maintain connectivity with the ACE NBC and MAGTF NBC control centers.
- | Maintain and be familiar with the operational exposure guide (OEG).

**Force Protection Officer.** The force protection officer is responsible to the ACE G-3 for all airbase ground defense and rear area security issues. The force protection officer will—

- | Be familiar with the ACE force protection plan outlined in the MEF or ACE OPORD or FRAGO.
- | Maintain the status of all security forces (ground and aviation) at all ACE sites.
- | Maintain connectivity with the MAGTF rear area operations group (RAOG) to ensure seamless rear area security operations.

- | Receive requests for, and coordinate the use of, aviation assets (ground forces and aircraft) in the prosecution of a rear area security threat.
- | Provide rear area security/force protection requirements to future ops, via the current ops officer, for inclusion in the next ACE FRAGO and ATO.
- | Be familiar with the ACE force laydown.
- | Track the location and availability of preplanned rear area security aviation assets.
- | Coordinate with the close battle cell for aviation requirements that exceed the allotment on the ATO.

### **Current Ops Watch Crew**

The current ops watch crew is responsible for executing the current ATO and for supervising the proper employment of the six functions of Marine aviation during their assigned watch. The current ops watch crew is comprised of a senior watch officer (SWO), senior air coordinator (SAC), crew chief, interface coordination/track data cell, air defense cell, airspace control cell, close battle cell, deep battle cell, and search and rescue coordination cell.

**Senior Watch Officer.** The SWO is the senior watchstander in current ops and is responsible to the current ops officer for the overall direction and supervision of the watch. The SWO will—

- | Supervise the execution of the current ATO to—
  - n Ensure that situation and status displays are current and accurate.
  - n Evaluate the capability of available forces to fulfill ATO taskings and recommend a course of action to the current ops officer when there is a shortfall.

- n Keep the current ops officer informed of unexpected developments or problems that might impact planned operations.
- n Recommend adjustments to the published ATO when required by the current situation.
- n Issue ATO adjustments approved by the current ops officer and document all ATO changes and adjustments.

*Note: The SWO is delegated the responsibility of approving these changes in the current ops officer's absence.*

- l Be familiar with all aspects of air operations including force beddown, sortie availability, airspace control measures, communications, rules of engagement (ROE), aircraft capabilities and limitations, and munitions capabilities (using the execution cells for MOS expertise, as required).
- l Effect coordination with SWOs of subordinate, adjacent, and senior air-ground agencies.
- l Monitor reporting of events by agencies subordinate to the TACC.
- l Adjudicate with the MEF or JFACC any immediate JTARs or JTASRs that exceed the current planned allocation.
- l Determine reporting responsibilities and establish procedures for preparing reports from current operations for the commander's situation report, commander's daily briefing, and as directed by the current ops officer.
- l Perform the functions of the current ops officer when directed.

**Senior Air Coordinator.** The SAC is the senior MACCS watchstander in current ops. The SAC is responsible to the SWO and assists in supervising the watch crew. The SAC will—

- | Advise the senior watch officer on all matters pertinent to the MACCS in the conduct of current operations.
- | Assist the SWO in supervising the execution of the current ATO.
- | Be familiar with all aspects of air operations, to include force beddown, sortie availability, airspace control measures, communications, ROE, aircraft capabilities and limitations, and munitions capabilities (using the execution cells for MOS expertise, as required).
- | Assist the SWO in coordinating with SWOs of subordinate, adjacent, and senior air-ground agencies.
- | Monitor reporting of events by agencies subordinate to the TACC.
- | Perform the functions of the SWO, when required.
- | Coordinate with an internal maintenance coordinator (working directly for the SAC and crew chief) who will be responsible for MTACS provided equipment (e.g., MSCS, MESHnet, CTAPS, mobile electric power units, environmental control unit, and shelters). This internal maintenance coordinator will keep SYSCON and radio central advised and coordinate troubleshooting and restoration efforts for MTACS organic equipment.

**Crew Chief.** The crew chief is the senior enlisted MACCS crewmember and is responsible for the efficient functioning of the watch crew. The crew chief will—

- | Assist recorders and net operators.
- | Receive and distribute all operational messages.

- | Maintain logbooks and records for ATO-related activities.
- | Perform other duties as directed by the SWO.
- | Coordinate the repair priority of all operator equipment malfunctions with the TACC maintenance coordinator.

**Deep Battle Cell.** The deep battle cell is responsible to the SWO for the management of all aviation assets assigned to, or available to, the ACE that will be used in the prosecution of the MEF deep battle. The deep battle cell will—

- | Function as the deep battle air director for aircraft operating forward of the FSCL.
- | Direct all USMC aircraft and any joint or combined assets allocated to the MAGTF for prosecution of the MEF deep battle.
- | Direct USMC aircraft operations, allocated for the MEF deep battle, with the appropriate aircraft group(s) via the air boss(es).
- | Coordinate with the airspace control cell on the use of, and/or the need for, airspace control measures in the MEF deep battle area.
- | Coordinate with the applicable air boss(es) on the execution of deep operations. Upon SWO approval, the deep battle cell will direct the—
  - n Canceling of deep mission(s) in cases where requirements no longer exist.
  - n Launching of preplanned deep missions.
  - n Diverting of preplanned deep missions (also provide mission briefs to the aircrews via available means).
  - n Altering of scheduled launch times to meet new deep requirements generated by changing tactical situations.

- n Appropriate ordnance load-out for deep, alert aircraft launched against unscheduled targets as determined by the assessment cell.
- 1 Notify SWO of changes in deep asset availability.
- 1 Coordinate requests for JFACC assets for any deep requirements that exceed ATO asset availability or capability (time dependent). Monitor and coordinate the movement of all MAGTF-controlled UAVs operating in the MEF deep battle area.
- 1 Coordinate all dynamic retaskings of MAGTF-controlled UAVs (operating in the MEF deep battle area) with the airspace control cell, the close battle cell, the VMU squadron, and the MAGTF surveillance and reconnaissance center.
- 1 Provide aviation expertise to the air defense cell.

**Close Battle Cell.** The close battle cell is responsible to the SWO for the management of all aviation assets assigned to or available to the ACE, that will be used in the prosecution of the MEF close or rear battle. The close battle cell will—

- 1 Monitor the DASC's direction of USMC aircraft operations allocated to the MEF close/rear battle with the appropriate aircraft group(s) via the air boss(es).
- 1 Coordinate with the airspace control cell on the use of, and/or the need for, airspace control measures in the MEF close or rear battle areas as requested by the DASC.
- 1 Coordinate with the DASC and the applicable air boss(es) on the execution of close and rear operations.
- 1 Direct, on SWO approval and in coordination with the DASC, the—
  - n Canceling of close/rear mission(s) when the requirement no longer exists.

- n Launching of preplanned, close/rear mission(s).
- n Diverting of preplanned, close/rear mission(s).
- n Altering of scheduled launch times to meet new close and/or rear requirements generated by changing tactical situation.
- l Notify the SWO of changes in close asset availability.
- l Coordinate with the DASC to receive immediate JTARs and JTASRs.
- l Coordinate with the MAGTF air officer and the force fires coordination center to receive updated guidance on shifting assets for those requests that exceed allocation.
- l Coordinate with the deep battle cell on asset availability for JTARs and JTASRs before jointly recommending a course of action to the SWO.
- l Coordinate, through the SWO, with the deep battle cell for asset shifting.
- l Coordinate with the ground watch section for updates on friendly unit locations.

**Air Defense Cell.** The air defense cell is responsible for coordinating air defense within the MAGTF's area of operations. The air defense cell will—

- l Monitor, supervise, and direct the control of aircraft and missiles for air defense by subordinate MACCS agencies.
- l Coordinate air defense operations of MACCS agencies with external agencies.
- l Coordinate theater missile defense operations with external agencies.

- | Initiate orders to MACCS agencies for air defense and countermand subordinate agency actions as required.
- | Monitor the equipment status and operational posture of MACCS agencies relative to air defense.
- | Coordinate the establishment and dissemination of alert conditions.
- | Direct the SAAWC/TAOC on the execution of air defense missions. As directed by the SWO, and in coordination with the deep battle cell, the air defense cell will—
  - n Cancel missions when requirements no longer exist.
  - n Divert preplanned missions and provide mission briefs.
  - n Alter scheduled launch times to meet new time-on-station requirements generated by changing tactical situations.
  - n Direct launches of unscheduled missions and provide mission briefs.
  - n Recommend the reconstitution of on-call (strip alert) missions.
- | Ensure that displays are current and keep the SWO briefed on the air defense situation.
- | Ensure that all air defense section activities are coordinated properly with the rest of current ops and the AADC by—
  - n Coordinating movement of CAP stations.
  - n Coordinating alternate sectors of responsibility.
  - n Recommending changes in weapons control status(s) and air defense warning conditions to the SWO.
- | Coordinate airspace control measures with the airspace control cell.

- 1 Ensure that established cross tell procedures are used by subordinate air defense agencies and units.

**Airspace Control Cell.** The airspace control cell is responsible for all airspace issues. The airspace control cell will—

- 1 Coordinate with the ground watch section for the plotting and deconfliction of fire support coordination measures as they affect air operations.
- 1 Be familiar with joint, federal aviation administration, host nation, and JFACC airspace procedures.
- 1 Deconflict with external military and civilian host nation agencies by coordinating with the ACA for all immediate (current ATO) airspace requirements beyond the FSCL.
- 1 Update and monitor changes to the ACP/ACO/SPINS and apprise all watchstanders of changes and ensure all applicable display mediums are current.
- 1 Coordinate any airspace requirements affecting the DASC, close battle cell, deep battle cell, and the search and rescue coordination cell.

**Interface Coordination/Track Data Cell.** The interface coordination/track data cell is responsible for ensuring an accurate situation display and an orderly functioning of all data links. They are also responsible for track coordination within the MACCS and other tactical data systems. The interface coordination/track data cell will—

- 1 Provide track coordination within the MACCS and other tactical data systems by—
  - n Resolving track reporting conflicts.
  - n Resolving dual track designations.

- n Initiating drop track orders.
- n Resolving identification conflicts.
- n Initiating handover orders.
- n Readdressing selectively incoming and outgoing orders.
- | Supervise the proper use of manual cross tell procedures.
- | Recommend changes to data link configuration.
- | Ensure the data link picture is an accurate presentation of current air operations.
- | Ensure accurate and timely publishing of coordinating instructions for data link employment (i.e., OPTASKLINK), with the communications and information systems connectivity planner.
- | Recommend the establishment of surveillance sectors for suitably equipped platforms commensurate with their surveillance capabilities (i.e., TACOPDAT).
- | Assign responsibility for establishing and reporting special points for interface among all link participants.
- | Ensure that surveillance and combat identification procedures are disseminated and executed in accordance with published orders.
- | Use data link filters to protect participating units and data bases without degrading the air situation display.
- | Monitor tactical digital information links (TADILs) and make or recommend changes to optimize link quality.

**Assessment Cell.** The assessment cell is responsible for monitoring and assessing the effectiveness of all aviation functions in support of the total Marine air-ground task force battle (rear, close, and deep). The assessment cell will—

- 1 Acquire and maintain current information on the status and operations of air missions in support of the MAGTF rear, close, and deep battles.
- 1 Advise the current operations officer and/or senior watch officer, as required, on the employment of air assets in support of the Marine air-ground task force rear, close, and deep battles.
- 1 Provide the single point of contact within current operations for the synchronization of air operations in support of the MAGTF rear and close battle and with MAGTF deep attacks planned inside the ATO cycle.
- 1 Review MAGTF targeting guidance and combat assessment data (e.g., BDA, munitions effectiveness) to provide ATO refresh input to planned events at least 4 hours prior to execution.
- 1 Coordinate with the ACI target intelligence section to receive updated targeting and BDA information.
- 1 Coordinate with the intelligence watch section for current or projected enemy capabilities, enemy critical vulnerabilities, and potential enemy courses of action.
- 1 Coordinate with the ground watch section to receive updated MAGTF targeting guidance.
- 1 Coordinate with the ground watch section for current or projected ground scheme of maneuver, fire support plan, boundaries, and fire support control measures.

- | Receive in-flight reports from the deep and close battle cells and pass to the intelligence watch section for simultaneous review and processing.
- | In conjunction with the ACI target intelligence section, recommend to the senior watch officer dynamic retasking of air assets in response to emergent targets in the deep battle area.
- | Assess the impact of shifting assets on the rear, close, and deep battles during the current ATO.
- | Recommend changes to, or identify preplanned ordnance configurations in response to, target changes or changing weather conditions.
- | Maintain liaison with the direct air support center, the MAGTF air officer, and the fire support coordinator.
- | Recommend and coordinate airspace control measures with the airspace control cell for events being planned (e.g., kill box shift, minimum risk route activation).

**Search and Rescue Coordination Cell.** The search and rescue coordination cell is responsible for coordinating search and rescue and/or the TRAP. The search and rescue coordination cell will—

- | Supervise activating and monitoring of SAR nets and execution checklists, as required.
- | Draft all messages pertaining to MAGTF SAR and TRAP operations (e.g., search and rescue incident report [SARIR]).
- | Coordinate with the joint search and rescue coordinator (JSRC) concerning TRAP aircraft availability and requirements for assets that exceed ACE platform capabilities and survivability for SAR operations.

- 1 Notify the SWO of supporting aircraft requirements for SAR and TRAP operations, the progress of SAR and TRAP operations, and any situations that restrict or hinder SAR and TRAP operations.
- 1 Coordinate SAR and TRAP efforts with units and/or agencies external to the ACE (e.g., JFACC joint search and rescue coordination cell, joint rescue coordination center [JRCC]).
- 1 Coordinate SAR and TRAP efforts with the air defense cell, deep battle cell, and close battle cell whenever such efforts transit the effected airspace.
- 1 Ensure that SAR and TRAP reports are completed and maintained.
- 1 Monitor and update (including reconstitution, location, and availability) SAR and TRAP assets.
- 1 Provide feedback to future ops on changes required for subsequent ATOs concerning SAR and TRAP support (e.g., packaging, SPINS, checklists).

### LAYOUT

The current ops layout is shown in figure 2-9.

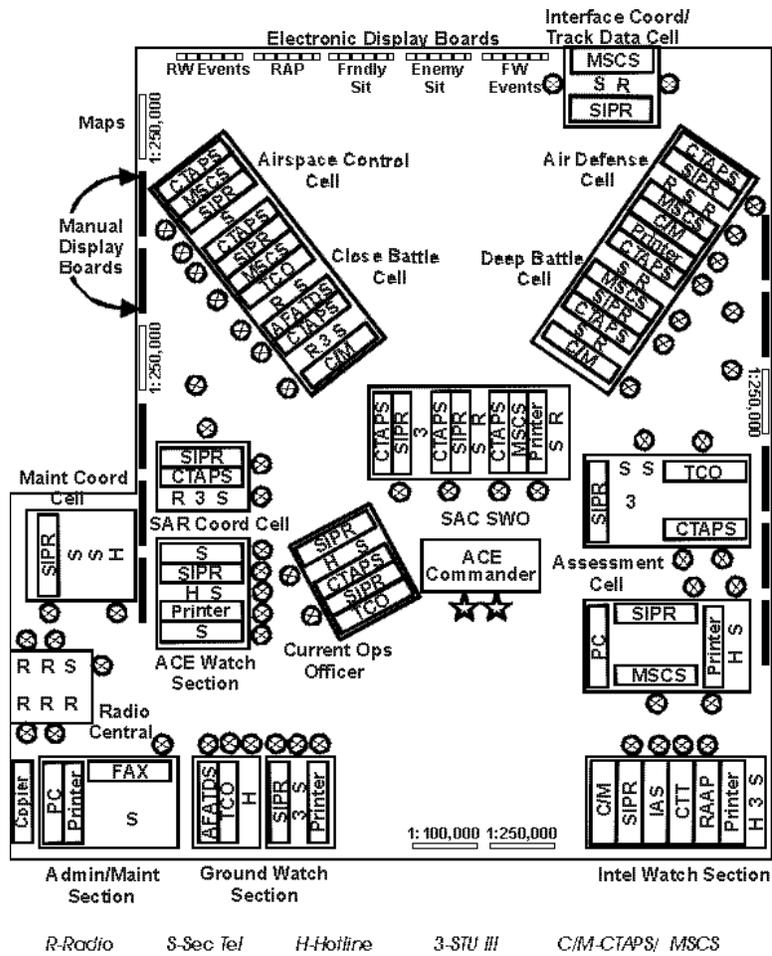


Figure 2-9. Current Ops Layout.

## Section IV

# Air Combat Intelligence

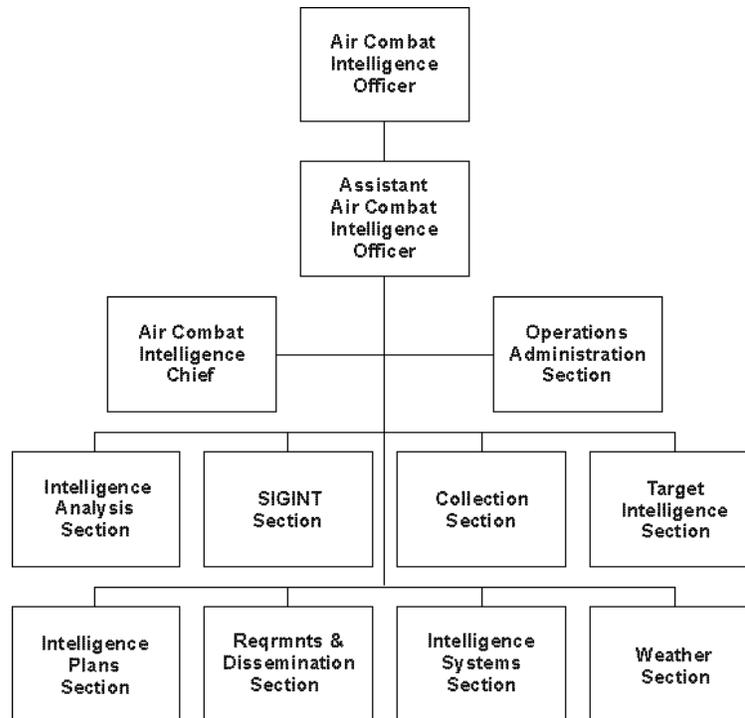
### ORGANIZATION AND MANNING

ACI is organized as shown in figure 2-10. Manning of ACI is a combined effort using personnel from the ACE G-2 section, subordinate units, and attached units (e.g., radio battalion detachment, Marine tactical electronic squadron [VMAQ], tactical electronic reconnaissance processing and evaluation system [TERPES] detachment). The ACI must be sufficiently manned to maintain sustained 24-hour operations. This requires a minimum of two 12-hour watch sections.

### CONCEPT OF ORGANIZATION

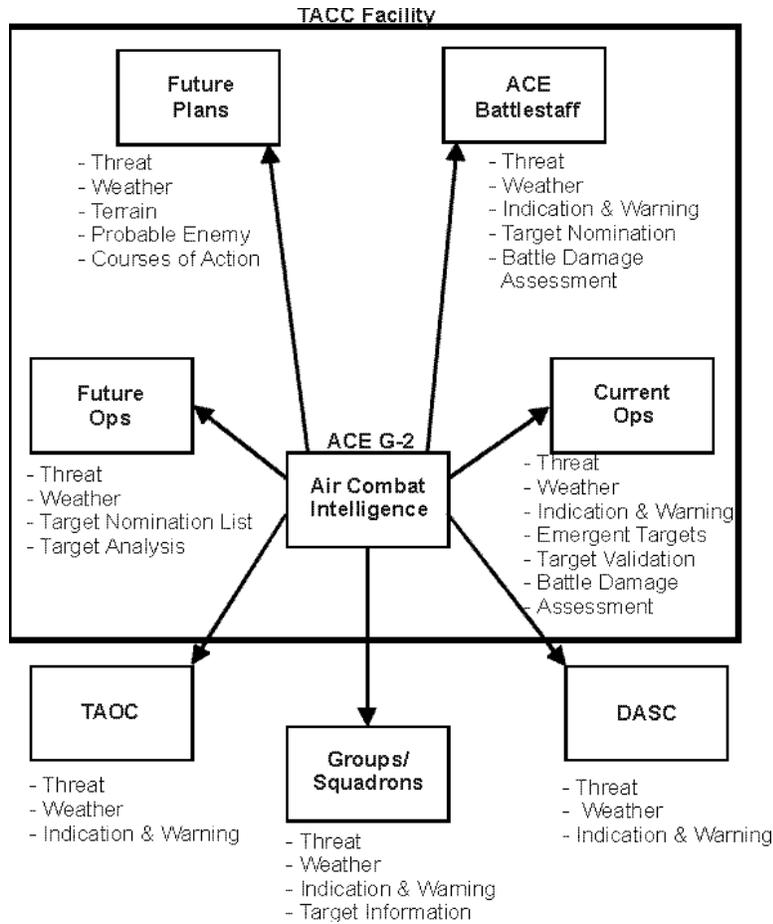
The overall ACE intelligence effort is organized with a balance between centralization of personnel for collection and analysis to support the ACE as a whole, and decentralization of personnel to support TACC operational elements (future plans, future ops, and current ops). This design concept compliments and reinforces the capabilities of the MAGTF as well as subordinate units. Figure 2-11 (on page 2-58) depicts the various types of intelligence support provided by the ACE G-2.

ACI is the focal point for intelligence activities within the ACE as well as the hub of aviation intelligence activity within the MAGTF. Under this organization are all the critical intelligence functional areas (i.e., collection management, all-source analysis, target



**Figure 2-10. Air Combat Intelligence.**

intelligence, imagery intelligence, signals intelligence, requirements and dissemination, and weather) required to support ACE operations. This unity of intelligence effort, under the central direction of the ACE G-2, ensures the production and dissemination of fused, timely, and tailored all-source intelligence in support of the ACE. It reduces unnecessary redundancy and duplication of effort. This is especially critical given the finite amount of intelligence resources available within the ACE.



**Figure 2-11. ACE G-2 Intelligence Support.**

On the other hand, selected intelligence personnel are collocated with future ops and current ops, and (as required) with future plans to provide continuity of support during the operational cycle. Intelligence representatives are critical to the integrated planning and

execution effort as they provide focused support, drawn from a centralized analysis and production capability, throughout all phases of the operation. They serve as a conduit between their operational cell and ACI.

### MISSION AND FUNCTIONS

Air combat intelligence is responsible to the ACE G-2 for producing and disseminating aviation-tailored, all-source intelligence required for decisionmaking during the planning and execution of MAGTF air operations. ACI extends and compliments the efforts of the MAGTF G-2 all-source fusion center (AFC). ACI will—

- | Maintain close and continuous liaison with the MAGTF G-2 operations section, the JAOC intelligence division, and other designated intelligence agencies/units as appropriate.
- | Prepare ACE intelligence estimates and intelligence summaries.
- | Direct, coordinate, and supervise the development and forwarding of ACE PIRs and other intelligence requirements (OIR).
- | Prepare and implement the ACE organic intelligence collection plan including planning and coordinating UAV operations as required.
- | Direct, coordinate, and supervise the production and dissemination of all-source intelligence (including target intelligence) to the ACE commander, staff, and subordinate units.
- | Direct, coordinate, and determine ACE requirements for maps, charts, graphic aids, and imagery products and supervise appropriate distribution.
- | Coordinate intelligence support for ACE survival, evasion, resistance, and escape (SERE) requirements.

- | Arrange and coordinate dissemination of weather data for the ACE.
- | Provide the current ops assessment cell with data, information, and/or intelligence, as requested.
- | Process mission and pilot reports.
- | Perform targeting.
- | Interface with functional areas in current and future ops via respective intelligence watch sections.

## BILLET DESCRIPTIONS

### ACI Officer

The ACI officer is the senior intelligence officer in ACI and is directly responsible to the ACE G-2 for the overall direction and supervision of ACI. The ACI officer will—

- | Supervise the preparation and setup of ACI.
- | Direct and supervise ACI in the collection, analysis, production, and dissemination of all-source tailored intelligence in support of the ACE commander, staff, and subordinate units.
- | Issue threat alerts by the most timely means, consistent with classification (normally a voice or flash intelligence report [INTREP]), to units threatened by the enemy action.
- | Ensure that the ACE G-2 is informed of—
  - n Major changes in the enemy's disposition, composition, capabilities, and/or probable courses of action.
  - n Any problem that could affect the ability of ACI to accomplish its assigned mission.

- | Direct the flow of intelligence information within ACI by—
  - n Reviewing all incoming intelligence messages to determine internal routing.
  - n Ensuring that sections receive and review applicable intelligence messages and take appropriate action in a timely manner.
- | Supervise the preparation, review, and release of INTREPs and intelligence summaries (INTSUMs) as directed by the ACE G-2.
- | Supervise the preparation, review, and presentation of intelligence briefings as directed by the ACE G-2.
- | Ensure all sensitive compartmented information (SCI) reports and briefings are reviewed and cleared by special security office (SSO) personnel prior to release.
- | Ensure that all ACI maps and displays are accurate and current.
- | Ensure that backup procedures are prepared and can be implemented rapidly if automated support systems fail.
- | Keep ACI informed of the ACE commander's guidance, intent, and objectives and the ACE G-2's concept of intelligence operations.
- | Compile recommended PIRs for the ACE G-2's review. This includes PIRs submitted by future plans, future ops, and current ops.
- | Direct and supervise the activities of attached intelligence specialists teams.
- | Maintain close and continuous liaison with the MAGTF G-2 operations officer.

- | Ensure that communication is maintained with the fixed- and rotary-wing flight line intelligence briefing and debriefing sections.

### **Assistant ACI Officer**

The assistant ACI officer is responsible for the internal functioning of the ACI in accordance with the ACI officer's guidance and direction. The assistant ACI officer will be prepared to assume all the duties of the ACI officer when required.

### **ACI Chief**

The ACI chief is the senior enlisted intelligence specialist in ACI. The ACI chief is responsible to the ACI officer for supervising ACI administrative and supply support. The ACI chief will—

- | Assist the ACI officer in the set up of ACI.
- | Assist the ACI officer in the production and dissemination of all-source intelligence.
- | Receive and separate incoming messages and reports into administrative and operational categories; indicate recommended routing or action; and deliver to the ACI officer for review and routing instructions.
- | Function as the ACI secondary control point custodian for classified material.
- | Coordinate closely with the ACE intelligence chief on personnel, administrative, supply, and logistics requirements.

### **ACI Operations Administration Section**

The ACI operations administration section (ops admin section) is responsible for providing operational and administrative support to air combat intelligence. The ACI operations administration section will—

- | Maintain the intelligence journal and journal file.
- | Maintain ACI files and reference documents.
- | Route and deliver incoming and outgoing intelligence messages as directed.
- | Provide general administrative support to air combat intelligence.
- | Function as the intelligence net operator by copying all incoming voice radio traffic in appropriate format, noting originator and time of receipt, and passing to the ACI chief.
- | Assist the ACI chief as directed.

### **Intelligence Analysis Section**

The intelligence analysis section is responsible for producing and disseminating all-source intelligence in support of ACE operations. The intelligence analysis section is comprised of an all-source analysis cell, an order of battle cell, and an imagery analysis cell.

**Intelligence Analysis Officer.** The intelligence analysis officer is responsible to the ACI officer for overseeing the intelligence analysis section. The intelligence analysis officer will—

- | Maintain the flow of all-source intelligence information within the intelligence analysis section, ensuring that all reports received are rapidly screened, their significance assessed, and appropriate action taken in a timely manner.

- | Supervise the intelligence analysis and production effort, to include preparation of INTREPs and INTSUMs.
- | Prioritize, collate, and forward requests for information (RFIs) to the requirements and dissemination section for action.
- | Prioritize, collate, and forward collection requirements to the collection section for action.
- | Oversee the operations of the intelligence analysis system (IAS) within ACI.
- | Maintain a current assessment of the enemy situation and be prepared to brief as required.
- | Keep all sections of ACI updated on the current enemy situation as well as probable future enemy courses of action.
- | Assist the intelligence plans section in the preparation of intelligence estimates for future operations.
- | Assist the target intelligence section in the production and maintenance of target folders.
- | Present intelligence briefings on the current and future enemy situation as directed.
- | Provide intelligence in support of SERE to the current ops/search and rescue coordination cell and subordinate units.
- | Maintain close and continuous liaison with the MAGTF AFC.
- | Inform the ACI officer of major changes in the threat environment.

**All-Source Analysis Cell.** The all-source analysis cell is responsible for conducting all-source intelligence analysis and production. The all-source analysis cell will—

- | Monitor all-sources for time critical intelligence and/or significant changes in enemy operations, tactics, and threats.
- | Respond to RFIs and analysis support from other G-2 sections and subordinate units.
- | Identify gaps in intelligence holdings and other information needs and submit RFIs and collection requirements to the intelligence analysis officer for review, consolidation, and forwarding to the appropriate ACI section for action.
- | Evaluate, analyze, and interpret all incoming intelligence reports to determine the enemy disposition, composition, capabilities, vulnerabilities, and most likely and most dangerous COAs.
- | Maintain, from all sources, the intelligence data base (manual or automated) on the ACE commander's area of responsibility, influence, and interest.
- | Maintain the enemy situation map on the ACE commander's area of responsibility, influence, and interest.
- | Develop aviation-related IPB products.
- | Produce INTREPs, INTSUMs, responses to requests for information (RRFIs), updated intelligence estimates, and intelligence briefings.
- | Identify high value targets and pass to the target intelligence officer for passage to current ops/future ops for attack by ACE assets.

**Order of Battle Cell.** The order of battle cell is responsible for conducting enemy order of battle analysis. The order of battle cell will—

- 1 Ensure the maintenance of enemy ground, air, air defense, and weapons of mass destruction (WMD) order of battle files.
- 1 Develop and provide the ground, air, air defense, and WMD input for INTREPs and INTSUMs.
- 1 Work closely with the analysts to assist in determining enemy capabilities and vulnerabilities.
- 1 Identify gaps in intelligence holdings and other information needs and submit RFIs to the intelligence analysis officer for review, consolidation, and forwarding to the appropriate ACI section for action.

**Imagery Analysis Cell.** The imagery analysis cell is responsible for providing imagery interpretation and product support to ACI. The imagery analysis cell will—

- 1 Assist the target development cell in the development of desired mean points of impact for each target.
- 1 Provide imagery interpretation support to the target analysis effort, to include target material production.
- 1 Maintain the ACI imagery library.
- 1 Identify gaps in intelligence holdings and other information needs and submit RFIs to the intelligence analysis officer for review, consolidation, and forwarding to the appropriate ACI section for action.

## Signals Intelligence Section

The signals intelligence (SIGINT) section is responsible for providing communications intelligence (COMINT) and electronic intelligence (ELINT) support. The SIGINT section is comprised of a COMINT cell and ELINT cell.

**SIGINT Officer.** The SIGINT officer is responsible to the ACI officer for overseeing the SIGINT section. The SIGINT officer will—

- 1 Maintain the flow of SIGINT information within the SIGINT section, ensuring that all reports received are rapidly screened, their significance assessed, and appropriate action taken in a timely manner.
- 1 Supervise the SIGINT analysis and product effort, including preparation of COMINT and ELINT summaries as required.
- 1 Prioritize, collate, and forward RFIs to the requirements and dissemination section and collection requirements to the collection section for action.
- 1 Ensure the timely dissemination of SIGINT derived information to the applicable ACI section.
- 1 Assist the collection section in planning and coordinating support from MAGTF, theater, and national SIGINT assets.
- 1 Maintain close and continuous liaison with the MAGTF SIGINT officer.
- 1 Inform the ACI officer of major changes in the threat environment derived from SIGINT.

**COMINT Cell.** The COMINT cell is responsible for conducting COMINT analysis in support of ACE operations. It will be located in the tactical sensitive compartmented information facility (TSCIF). The COMINT cell will—

- 1 Provide COMINT-based indications and warning including theater missile defense warning.
- 1 Coordinate with G-6 to plan and implement security monitoring to reduce the command's vulnerability to enemy SIGINT activity.
- 1 Assist in the protection of ACE communications from enemy exploitation by conducting communication security (COMSEC) surveillance and surveys to determine the success of COMSEC efforts.
- 1 Identify gaps in intelligence holdings and other information needs and submit RFIs and collection requirements to the SIGINT officer for review, consolidation, and forwarding to the appropriate ACI section for action.
- 1 Provide COMINT summary reporting to the all-source analysis cell for fusion in determining enemy disposition, composition, capabilities, vulnerabilities, and most likely and most dangerous courses of action.
- 1 Coordinate with the target intelligence and intelligence analysis sections to identify potential high value targets for attack by ACE assets.
- 1 Maintain close and continuous liaison with the MAGTF radio battalion to ensure timely exchange of COMINT information.

**ELINT Cell.** The ELINT cell is responsible for conducting ELINT analysis in support of ACE operations. The ELINT cell will—

- | Maintain the electronic order of battle data base in the ACE commander's area of responsibility, influence, and interest.
- | Process, analyze, and report enemy electromagnetic emissions derived from the various tactical broadcasts as well as from the EA6-B.
- | Provide ELINT-based indications and warnings to include theater missile defense warning.
- | Provide timely intelligence information in support of ACE electronic warfare activities.
- | Identify gaps in intelligence holdings and other information needs and submit RFIs and collection requirements to the SIGINT officer for review, consolidation, and forwarding to the appropriate ACI section for action.
- | Provide ELINT summary reporting to the all-source analysis cell for fusion in determining enemy disposition, composition, capabilities, vulnerabilities, and most likely and most dangerous courses of action.
- | Coordinate with the target intelligence and intelligence analysis sections to identify potential high value targets for attack by ACE assets.
- | Maintain close and continuous liaison with VMAQ TERPES detachments to ensure the timely exchange of ELINT information.

## Collection Section

The collection section is responsible for receiving ACE collection requirements, formulating detailed collection plans, and tasking/requesting collection assets for the required information.

**Collection Officer.** The collection officer is responsible to the ACI officer for overseeing the collection section. The collection officer will—

- 1 Receive approved PIRs from the ACI officer, prepare a detailed collection plan, and task organic collection assets and/or request external (e.g., MAGTF, theater, national) collection assets to satisfy them.
- 1 Manage the processing, validation, and submission to the MAGTF of imagery intelligence (IMINT), SIGINT, and human intelligence (HUMINT) collection requirements from the ACE staff and subordinate units.
- 1 Maintain awareness of the operational status of organic, MAGTF, theater, and national collection assets, and ensure that the ACI officer is appraised of collector status and capability.
- 1 Manage all reconnaissance and surveillance assets assigned or made available to the ACE.
- 1 Maintain the reconnaissance and surveillance status board/log, and maintain displays to include ongoing and planned collection missions.
- 1 Evaluate requirement satisfaction, providing requester feedback, and adjust the collection plan as required.
- 1 Maintain close and continuous liaison with the MAGTF collection section and surveillance and reconnaissance center.
- 1 Inform the ACI officer of all significant developments affecting the intelligence collection effort.

## Target Intelligence Section

The target intelligence section is responsible for deliberate and reactive targeting in support of ACE operations including target analysis, target development, target validation, and BDA. The target intelligence cell is comprised of a target development cell, target validation cell, and BDA cell.

**Target Intelligence Officer.** The target intelligence officer is responsible to the ACI officer for overseeing the target intelligence section. The target intelligence officer will—

- 1 Maintain the flow of target intelligence information within the target intelligence section, ensuring that all reports received are rapidly screened, their significance assessed, and appropriate action taken in a timely manner.
- 1 Approve all targets being nominated to current ops for immediate attack.
- 1 Ensure that all necessary target intelligence support is provided to future ops and current ops as required.
- 1 Oversee the operation of the rapid application of air power (RAAP) system and the advance field artillery tactical data system (AFATDS) within ACI.
- 1 Provide target intelligence to the ACE in support of deliberate and reactive targeting.
- 1 Prepare the target nomination list and submit final nominations to the ACE G-2 for evaluation prior to the ACE targeting board.
- 1 Present ACE target nominations and rationale to the ACE targeting board.
- 1 Plan and coordinate the BDA effort for the ACE.

- 1 Prioritize, collate, and forward RFIs to the requirements and dissemination section and collection requirements to the collection section for action.
- 1 Participate as a member of the combat assessment board convened by the future ops ATO development officer.
- 1 Maintain liaison with the MAGTF G-2 target intelligence section.
- 1 Inform the ACI officer of all significant developments affecting the target intelligence effort.

**Target Development Cell.** The target development cell is responsible for maintaining the target intelligence data base and conducting target analysis in support of ATO production. It works closely with the future ops ATO planning cell. Target development personnel may be located in ACI or future ops, wherever they can be most effective. The target development cell will—

- 1 Ensure MAGTF target nominations are submitted within the timelines of the established ATO planning cycle.
- 1 Maintain close and continuous liaison with the future ops intelligence watch section and ATO planning cell to ensure timely exchange of target intelligence information required for ATO development.
- 1 Identify gaps in intelligence holdings and other information needs and submit RFIs and collection requirements to the target intelligence officer for review, consolidation, and forwarding to the appropriate ACI section for action.
- 1 Coordinate with the intelligence analysis section to identify potential high-value targets for attack by ACE assets.

- | Review all pertinent incoming intelligence reports, and maintain the target intelligence data base (manual or automated) on the ACE commander's area of responsibility, influence, and interest.
- | In coordination with the intelligence analysis section, conduct detailed analysis of the enemy and area of operations in order to develop a prioritized target list based on the ACE commander's targeting guidance and objectives and after having reviewed ROE and no-attack restrictions.
- | Provide target data, to include desired mean point of impact, to the future ops ATO strike planners, and assist in weaponeering targets and developing attack packages. If appropriate, recommend the sequence and timing of attacks to maximize effects on the enemy.
- | Build and maintain target folders.
- | Plot all targets validated for attack on the appropriate maps.
- | Track the status of target nominations submitted to higher headquarters for sourcing.
- | Maintain a record of target nominations for each ATO, annotating each nomination with the targeting rationale and action taken.

**Target Validation Cell.** The target validation cell is responsible for target validation and refinement for all air missions flown in support of the MAGTF. It works closely with the current ops deep battle cell. Target validation personnel may be located in ACI or current ops, wherever they can be most effective. The target validation cell will—

- | Maintain the status of targets on the MAGTF prioritized target list and provide target recommendations to the current ops deep battle cell.

- 1 Monitor execution of the current ATO as it pertains to sorties planned against MAGTF nominated targets.
- 1 Monitor current day ATO execution and validate targets at the 8- and 4-hour mark before mission strike, providing target updates to the current ops deep battle cell.
- 1 Identify targets that require immediate reattack before the next ATO and provide the updated target information to the current ops deep battle cell.
- 1 Inform the current ops deep battle cell of significant changes in target priorities and status.
- 1 Maintain close and continuous liaison with the current ops intelligence watch section and deep battle cell to ensure continuous and timely exchange of target intelligence required for ATO validation and refresh.
- 1 Identify gaps in intelligence holdings and other information needs and submit RFIs and collection requirements to the target intelligence officer for review, consolidation, and forwarding to the appropriate ACI section for action.
- 1 Pass lucrative/time-critical target nominations for immediate attack to the current ops intelligence watch section.

**Battle Damage Assessment Cell.** The battle damage assessment (BDA) cell is responsible for conducting first phase BDA for all air missions flown in support of the MAGTF. The BDA cell will—

- 1 Process MISREPs, to determine initial BDA, and query originators for missing, incomplete, or illegible reports.
- 1 Conduct damage assessments of targets struck and maintain cumulative BDA, target status, and estimates of target recuperability. Pass this information, via the target intelligence officer, to the combat assessment board in future ops ATO development.

- | Post BDA to the installation or enemy file data base.
- | Maintain target status information and pass pertinent information to the target development and target validation cells.
- | Maintain and analyze the cumulative BDA, target status, and estimates of target recuperability and pass pertinent information to the target development and target validation cells.
- | Identify targets that may require immediate attack/re-attack before the next ATO and pass the information to the target validation cell.
- | Prepare periodic BDA summaries from mission reports (MIS-REPs).
- | Identify gaps in intelligence holdings and other information needs and submit RFIs and collection requirements to the target intelligence officer for review, consolidation, and forwarding to the appropriate ACI section for action.

### **Intelligence Plans Section**

The intelligence plans section is responsible for preparing all intelligence annexes and estimates in support of the ACE planning effort.

**Intelligence Plans Officer.** The intelligence plans officer is responsible to the ACI officer for overseeing the intelligence plans section and acting as the primary liaison with future plans. The intelligence plans officer will—

- | Prepare intelligence annexes for all operations and supporting plans developed by future plans.
- | Provide future plans with intelligence updates and estimates throughout the mission planning cycle.

- 1 Produce, collate, and submit all PIRs required by future plans during mission planning.
- 1 Provide the ACE G-2 with periodic COA and mission briefs for upcoming ACE mission changes.
- 1 Provide the future plans officer and senior planner updated intelligence asset availability and status.
- 1 Maintain and update the current and projected enemy situation in future plans.
- 1 Prepare and deliver the intelligence portion of all briefs provided to the ACE commander and ACE battlestaff by future plans.

### **Requirements and Dissemination Section**

The requirements and dissemination section is responsible for processing all RFIs, imagery products, target materials, and mapping, charting, and geodesy (MC&G) materials from the ACE staff and subordinate units.

**Requirements and Dissemination Officer.** The requirements and dissemination officer is responsible to the ACI officer for overseeing the requirements and dissemination section. The requirements and dissemination section will—

- 1 Receive, validate, prioritize, and process all requests for intelligence information, imagery products, target materials, and MC&G materials from the ACE staff and subordinate units and ensure—
  - n That requests are consolidated, where appropriate, and satisfied from data available within ACI, where possible.
  - n That unsatisfied requests are forwarded to higher headquarters for action.

- n The timely dissemination of all replies.
- l Maintain the intelligence request log, tracking all RFIs until a response is received, passed to the requester, and declared by the requester to be satisfactory.
- l Coordinate with the collection section to satisfy PIRs.
- l Coordinate with the ACE G-1 for the distribution of hard-copy products to subordinate units.
- l Arrange and coordinate secondary dissemination of imagery to subordinate units.
- l Manage the command's MC&G program, ensuring the availability of MC&G products to support the ACE staff and subordinate units during all phases of the operation.
- l Inform the ACI officer of all time delays in satisfying PIRs or other high priority requests for intelligence.

### **Intelligence Systems Section**

The intelligence systems section is responsible for the day-to-day management of all ACE G-2 automated intelligence systems.

**Intelligence Systems Officer.** The intelligence systems officer is responsible to the ACI officer for overseeing the intelligence systems section. The intelligence systems officer will—

- l Manage all deployed G-2 automated intelligence systems (e.g., IAS, RAAP, and AFATDS).
- l Establish and maintain automated connectivity with higher, adjacent, and subordinate units.
- l Maintain liaison with the MEF intelligence systems section.

- | Inform the ACI officer on computer systems status and problems.

### **Weather Section**

The weather section is responsible for providing weather forecasts and summaries to support current and future ACE operations.

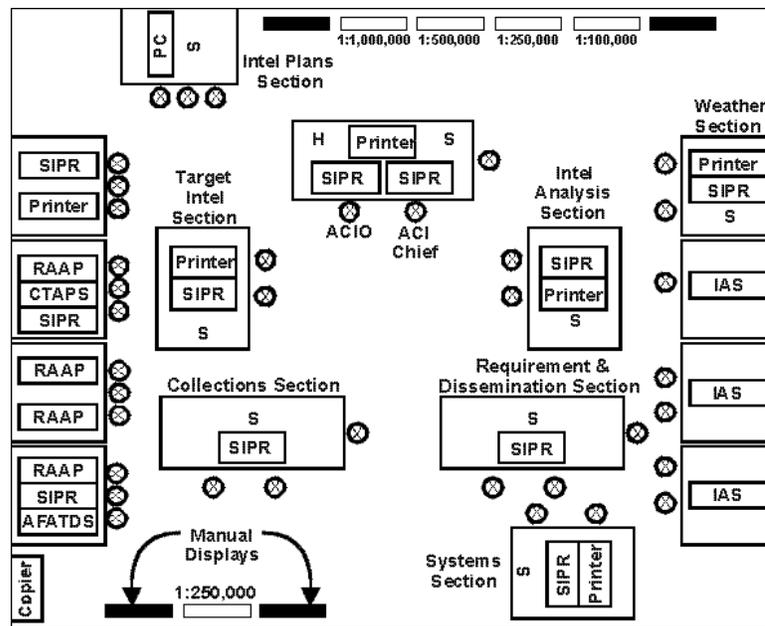
**Weather Officer.** The weather officer is responsible to the ACI officer for overseeing the weather section. The weather officer will—

- | Direct and coordinate the activities of meteorological elements within the ACE.
- | Provide tailored current to 96-hour forecasts/summaries to support current and future ACE operations (e.g., weather forecasts [WEAX], tactical atmospheric summaries, and strike and assault forecasts).
- | Provide timely advisories or warnings of expected weather that may affect adversely ACE operations and emphasize on significant weather changes at forward operating bases and enroute to and over target areas.
- | Prepare electro-optical tactical decision aids (EOTDAs) for use by the ACE staff and subordinate units, detailing the effects of weather on sensor performance of various weapon systems and platforms.
- | Provide weather briefs to the ACE commander and staff.
- | Coordinate dissemination of weather data within the ACE staff and subordinate units.
- | Input weather data into the contingency theater automated planning system as required.

- 1 Inform the ACI officer of any significant weather developments that could impact ACE operations as well as any significant problems in the ACE's meteorological capabilities.
- 1 Maintain connectivity with the joint meteorological office.

### LAYOUT

The air combat intelligence layout is shown in figure 2-12.



**Figure 2-12. ACI Layout.**

The TSCIF compound layout is shown in figure 2-13. The TSCIF is an integral part of ACI operations and must be located in close proximity to ACI.

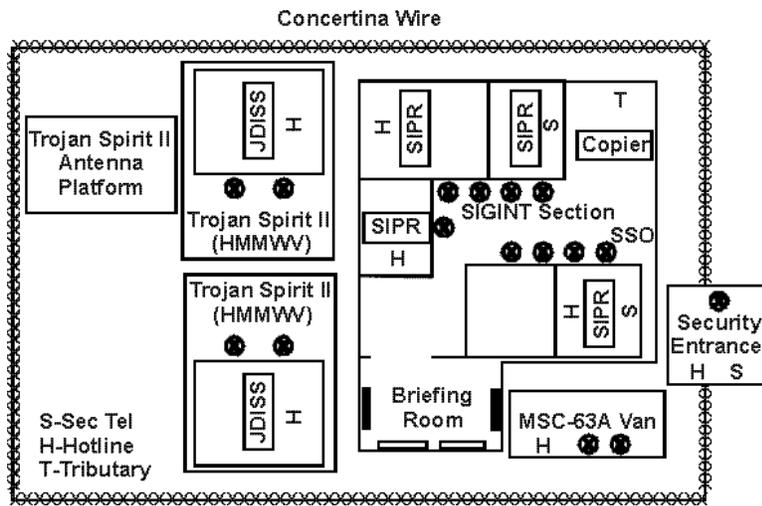


Figure 2-13. TSCIF Compound Layout.

## Chapter 3

# System Description

This chapter presents the various individual and ancillary TACC components and provides a discussion of their associated capabilities. This equipment provides the TACC with the requisite equipment and facilities necessary to plan and supervise the employment of Marine air-ground task force aviation.

The TACC has undergone extensive design changes since fiscal year 1991. The outcome is a composite system with hardware that integrates portions of the predecessor system, ground common support items, mandated subsystems, and developmental and nondevelopmental items. The resulting system designation is the AN/TYQ-1(V) tactical air command center.

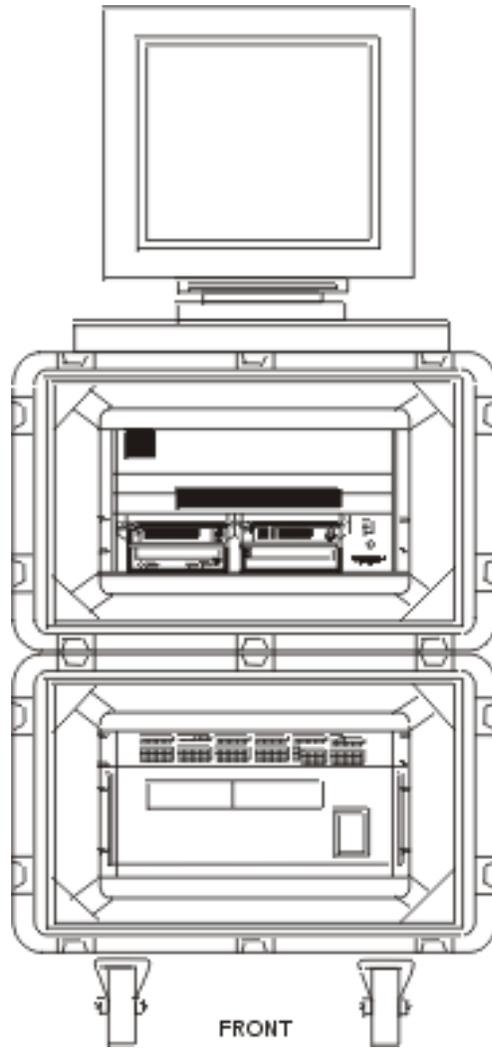
The tactical air command center is a large, composite system which consists of a multiple source correlation system (MSCS), the contingency theater automated planning system (CTAPS), three AN/MRQ-XXXs, a commander's tactical terminal three-channel (CTT3), a suite of expandable shelters with related furnishings, a collection of commercial off-the-shelf computer equipment and peripherals that comprise the AN/TYY-1(V), and a combination of stand-alone command, control, and communications distribution system (C3DS) (MESHnet) components.

## MULTIPLE SOURCE CORRELATION SYSTEM

The MSCS can take situation information from multiple information sources, reported in a variety of different formats, and distribute it in near-real-time. The system distributes correlated information to operations and intelligence elements (e.g., the intelligence analysis system [IAS]). The MSCS communicates with the operations and intelligence elements via tactical digital information link (TADIL) A and B. A significant MSCS capability is that, when linked to the commander's tactical terminal three-channel, it provides the TACC with a satellite interface. This allows the TACC to receive near-real-time intelligence data from the tactical reconnaissance intelligence exchange system (TRIXS) and tactical information broadcast server (TIBS) networks, as well as from the tactical data dissemination system (TDDS) and on-board processing/direct down link (OBP/DDL) broadcasts. When linked to the CTT3, the MSCS provides a transmit capability that allows the commander to respond to the TRIXS and TIBS network. The MSCS operates as a certified special information system and has tactical reporting responsibility.

MSCS processing includes the comparison of track and emitter data for possible correlation and the distribution of nonredundent data in any of several formats. This entire process can be done automatically or with operator interaction, when necessary.

All MSCS equipment is transported and operated from within its transit cases except the monitor, which is removed from its case during operation. See figure 3-1. These transit cases are transported within the S-786/G TACC shelters. Table 3-1 (on page 3-4) lists the equipment that comprises the MSCS as well as the ancillary data link equipment (ADLE) retained from the AN/TYQ-51 for use with the MSCS.



**Figure 3-1. Multiple Source Correlation System.**

**Table 3-1. MSCS Components and ADLE.**

| <b>Assembly Number</b> | <b>Nomenclature</b>                        | <b>Quantity</b> |
|------------------------|--------------------------------------------|-----------------|
| A1                     | Data management processor                  | 1               |
| A2                     | Display processor                          | 1               |
| A3                     | Communications processor                   | 1               |
| A4                     | 2-TSEC/KG-84C,<br>2-1280T modems           | 1               |
| A5                     | 2-TSEC/KG-84C,<br>2-1280T modems           | 1               |
| A6                     | 4-TSEC/KG-84                               | 1               |
| A7                     | TSEC KG-40 and<br>MX-512 data terminal set | 1               |
| A8                     | MACKAY 8050A series (HF radio set)         | 1               |
| A9                     | AN/GRC-171B(V)4 (UHF radio set)            | 1               |

## CONTINGENCY THEATER AUTOMATED PLANNING SYSTEM

### General Description

The contingency theater automated planning system is a collection of software modules modified to work together to facilitate the preparation and dissemination of the ATO and other data. CTAPS provides a means to—

- | Import intelligence from a variety of sources.
- | Analyze and manipulate the data.
- | Recommend weapon systems to attack targets.
- | Track air assets and resources.
- | Assign air assets and resources.
- | Form missions.
- | Designate airspace.
- | Output the air tasking order.

CTAPS usually contains at least six UNIX workstations, and it can be increased to any size, depending on the scale of operations. It can be employed as a host with full capabilities or as a remote connected to a host with limited capabilities which allow subordinate agencies to receive, parse, print, and update the ATO. CTAPS is the joint standard for ATO dissemination.

## Functions

Through manipulation of the CTAPS modules or applications, CTAPS provides the TACC with the capability to—

- 1 Maintain information on the tactical air situation and portions of the surface combat situation essential to the air effort.
- 1 Assist planners with allocation decisions, the development of the ATO, and the dissemination of the ATO to appropriate organizations and facilities.
- 1 Assist with the management of air assets including assignment and use of assets by subordinate air control or air defense agencies.
- 1 Receive, process, maintain, update, and disseminate information on tactical aircraft and MAGTF agencies.
- 1 Receive, process, maintain, update, and correlate intelligence information with other operation data bases.

## Modules and Applications

CTAPS applications provide specialized subprograms within the CTAPS software suite that allow operators and planners to work in specified areas. CTAPS modules most commonly used are the—

- 1 Advanced planning system (APS)—allows the planning for a time-phased employment of air resources during a given future period to achieve combat objectives consistent with the projected situation, operational constraints, commander's guidance, and the enemy threat. In its joint application, APS is designed to provide the joint force air component commander with the means to organize, plan, direct, and coordinate organic aviation elements with those of other Services or countries.

- 1 Airspace deconfliction system (ADS)—a planner defines, modifies, categorizes, and deconflicts airspace ensuring safe use within the theater or area of operations. ADS is also used to generate the airspace control order which summarizes the work of the airspace manager. The ACO is disseminated to, and used by, the aircrews, air control agencies, and joint or multinational forces operating within a designated theater or area of operations. ADS allows for the entry of air control means request messages, provides graphic tools for viewing these requests, and provides automated deconfliction of the requests. ADS also provides an automated tool for generating ACOs and making them available for incorporation in the ATOs or for transmitting the ACO as a separate message.
- 1 Computer assisted force management system (CAFMS)—used to generate, publish, and disseminate the ATOs and to operate an alert routing table, target information display, target list by target number, and target list by air mission. CAFMS allows operators to generate and edit strike packages and combat air patrol missions.
- 1 Intelligence correlation module (ICM)—provides the functionality to build a composite picture of the threat in a designated area of interest based on multiple sources. ICM accepts correlated and uncorrelated data, provides a means of overlaying the data on map backgrounds and reference data bases, and provides tools for the analyst to maintain various working, theater, and reference data bases. ICM also fuses battlefield objectives data received from multiple collection sources across multiple collection disciplines. ICM interfaces with the APS, rapid application of air power (RAAP), CAFMS, and U.S. message text format message preparation and parsing applications and sub-applications.
- 1 Joint munitions effectiveness manual (JMEM)—a series of computer programs that provides the capabilities to compute force

effectiveness for large numbers of aircraft, targets, weapons, and delivery conditions. The ultimate goal of JMEM is to predict how many weapons and/or aircraft would be required to sustain various levels of damage to a target. Weaponeering optimization information is provided to RAAP for those targets on the target nomination list.

- l RAAP—designed to support commanders at the theater or force level in integrating near-real-time intelligence with operations to effectively target a fast moving enemy in a dynamically changing environment. Information developed by RAAP is forwarded to APS. RAAP—
  - n Automatically receives externally generated intelligence.
  - n Maintains local target, threat, and order of battle data bases.
  - n Integrates high-level knowledge of enemy operations and intelligence analysis techniques with current and historical data to provide timely estimates of enemy military activity, posture, and intentions.
  - n Integrates situation-specific evidence of enemy activity with current force structure and posture to predict enemy near-term courses of action.
  - n Identifies high value air interdiction targets and determines the time and location to attack these targets.
  - n Maintains a friendly air resource data base.
  - n Recommends effective, coordinated application of available air assets against targets in a timely and efficient manner.

- 1 System administrator—functions allow designated communication-electronics Marines to monitor, troubleshoot, and manipulate the CTAPS data bases and system operating architecture to provide reliable CTAPS service to the operators.

### AN/MRQ-XXX

The AN/MRQ-XXX (see fig. 3-2) is the single-shelter configuration of the five-shelter AN/TSQ-207, high-mobility, downsized direct air support center (HMD DASC). In its five-shelter HMD

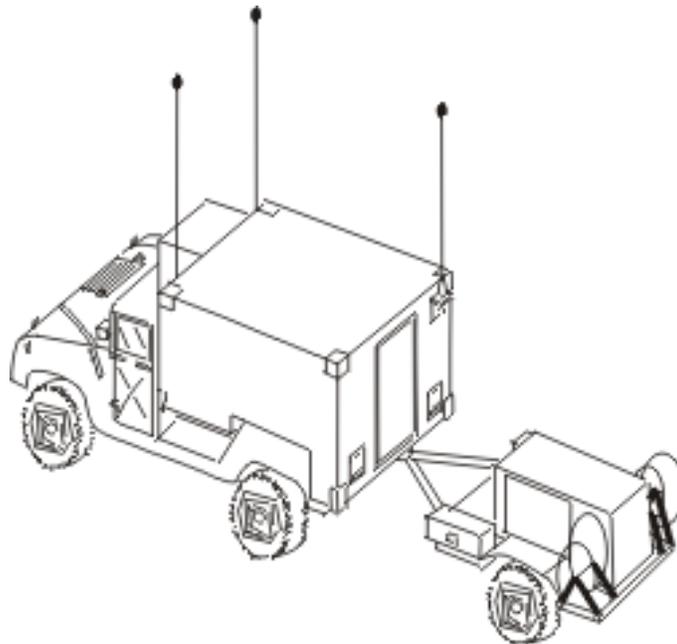


Figure 3-2. AN/MRQ-XXX.

DASC configuration, it is called the AN/TSQ-207. The nomenclature for a one-shelter configuration has yet to be determined. Each AN/MRQ-XXX provides rack space, antennas, as well as signal and power distribution for the VHF, UHF, HF, telephone, and requisite encryption assets organic to the Marine tactical air command squadron.

The command, control, and communications distribution system for the AN/MRQ-XXX is comprised of a system called MESHnet, which allows the operator to interface the following items:

- 1 User control device (UCD)—allows the operator access to the radios, intercom, and telephone. With the UCD, the operator can monitor four nets at one time and remotely switch crypto devices on and off.
- 1 Network access unit (NAU)—is the heart of the MESHnet. It routes traffic among UCDs and interfaces with radios, telephones, and an ETHERNET computer network.
- 1 ETHERNET interface unit (EIU)—connects the ETHERNET local area network on which the AN/MRQ-XXX automation equipment resides with the NAU.

MESHnet components within the tactical air command center's AN/MRQ-XXXs are used to remote the required radio and telephone nets to the TACC when a corresponding divorced set of MESHnet components is employed to distribute communications operator stations located throughout the shelter suite. The TACC is equipped with three AN/MRQ-XXXs which replace the two OE-334 (antenna coupler groups) and AN/TYA-16C (communications group).

### **COMMANDER'S TACTICAL TERMINAL THREE-CHANNEL**

The CTT-3 is a three-channel, ultra high frequency satellite communications and line of sight intelligence broadcast receiver. The CTT-3 provides the tactical air commander with near-real-time intelligence data from the tactical reconnaissance intelligence exchange system network, the tactical information broadcast server network, the tactical data dissemination system broadcast, and the on-board processing and direct down link broadcast. The CTT-3 transmit capability enables the commander to respond to both the TRIXS and TIBS network.

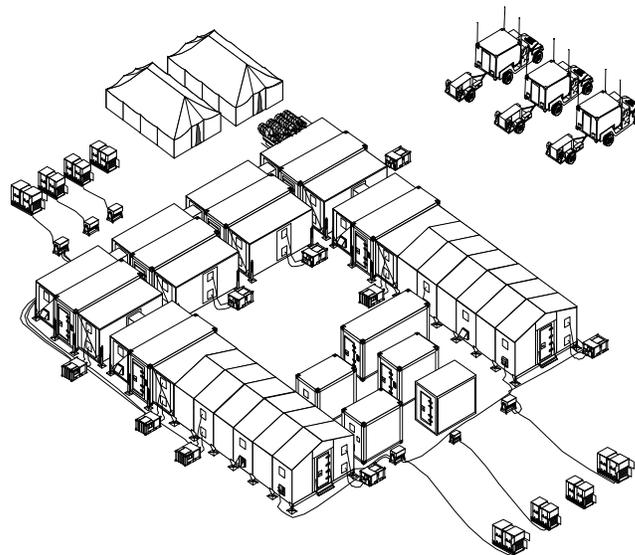
The CTT-3 is a ruggedized terminal that provides the user with a simultaneous, full-duplex single channel and two receive-only channels for processing various data streams from joint Service, tactical, and national intelligence dissemination networks. This input provides the tactical air commander with additional tools to perform rapid targeting, threat avoidance, battle management, and mission planning. The CTT-3 is transported in, and operated from, two identical transit cases. A third transit case is provided for accessories. Antennas are transported separately.

### **SHELTER SUITE**

The MTACS may or may not be responsible for providing shelter assets for future plans, ACI, or the SCIF. This layout facilitates, through collocation, the requirement to cross-functionally interact across the operational and intelligence continuum. Approximately 6,000 square feet are required to house the TACC facility. Due to the requirements for expediency in setup, deployment size, expandability, and system environmental controls (air quality and temperature), the preferred sheltering option would be to house the TACC

equipment in an existing (hard) structure (e.g., hangar, warehouse, or gymnasium). A second option is to use deployable, rigid, environmentally controlled structures. Tentage would be the least desirable option.

The TACC shelter suite consists of six S-786/G, international standards organization (ISO) shelters; two modular, extendible rigid wall shelters (MERWS); six S-835/G, shelter kit passageways; a customized power distribution system; and a collection of tables and chairs used inside the shelter suite. Figure 3-3 depicts the TACC set up using shelters and ancillary equipment organic to the MTACS. When set up in these shelters, assets organic to the Marine tactical air command squadron environmentally power and control



**Figure 3-3. TACC Setup Using Organic Shelters.**

the shelter suite. The shelter suite also has an inter-shelter blackout capability for overall light discipline.

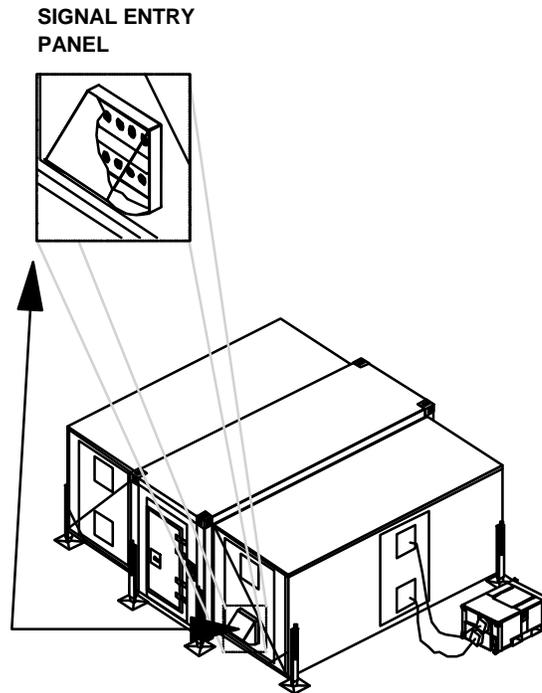
The cornerstones of the shelter suite are the S-786/G and the MERWS enclosures. The remaining portions of the shelter suite complex the shelters together, distribute power to the shelters, or furnish the interiors of the shelters. Storage during embarkation for all components of the shelter suite, with the exception of the power distribution system, is within the S-786/G shelters.

### **S-786/G ISO Shelter**

The S-786/G is the 100-ampere, 3-phase, 5-wire, 120/208 VAC variant of the Army standard family (ASF) of expandable rigid wall shelters. There are six modified S-786/G shelters in the shelter suite. Each of the S-786/Gs is a standard 8- by 8- by 20-foot expandable ISO shelter. The S-786/G can expand from both sides to form a 21.75- by 8- by 19.85-foot enclosure that provides roughly 400 square feet of open interior floor space (see figure 3-4 on page 3-14). All the S-786/G shelters have modifications that accept attachment to a MERWS, although the shelter suite only uses two in this capacity at any given time. The modified S-786/G has six close-out panel openings that, although populated, are capable of being removed or configured to accept either the S-835/G passage-ways, ECU supply or return panels, signal input or output panels, or blank panels. The S-786/G has a blackout relay that not only controls the overhead lighting within the S-786/G but is also capable of linking to an adjacent S-786/G or MERWS blackout relay.

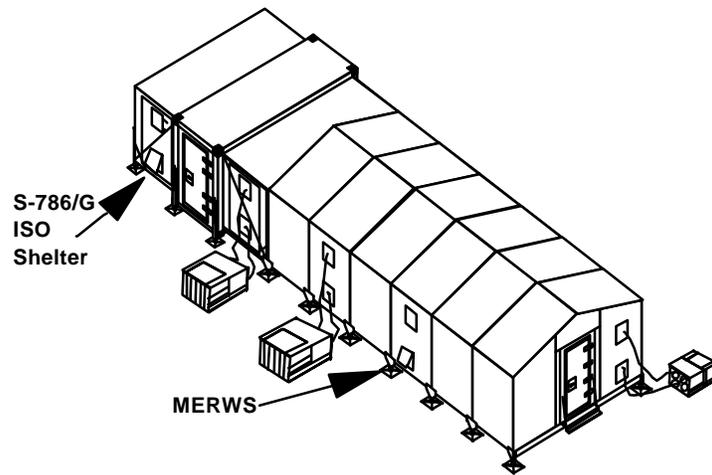
### **Modular Extendible Rigid Wall Shelter**

The modular extendible rigid wall shelter is a lightweight, knock-down kit designed for attachment to any of the ASF of extendible rigid wall shelters. The MERWS attaches to a modified S-786/G in



**Figure 3-4. S-786/G ISO Shelter.**

the shelter suite configuration. The shelter kit attaches to the extendible sidewall opening of the S-786/G. The lateral walls of a modified S-786/G expand out, one lateral wall separates them, an adapter kit attaches to the resulting 8- by 20-foot opening, and a sequence of repetitive modules is then erect end to end (see figure 3-5). The kit also breaks down to individual components (e.g., panels, base-frame pieces, roof trusses) and packs within the S-786/G for transport.



**Figure 3-5. Modular Extendible Rigid Wall Shelter.**

The S-786/G has modifications that facilitate MERWS kit attachment and stowage for shipment. The resulting structure provides roughly 1,150 square feet of unobstructed floor space. The MERWS can be unpacked and erected by four Marines in four hours. The MERWS features fluorescent lighting; 3-phase, 5-wire, 120/208 VAC, 100-ampere power; leveling jacks; and interchangeable panels for ease and flexibility of configuration. Due to its insulating qualities, the MERWS facilitates efficient heating and cooling. In the shelter suite configuration, the MERWS has a complement of two B0011 air conditioners. Of the 14 wall panels that comprise the MERWS, 5 accept 16-inch diameter ECU ducts. The complement of five wall panels with ECU ducts facilitates the use of additional air conditioners during extreme climatic conditions. The inclusion of fabric air ducts attached to the ECU internal intake and return vents further aid the heating and cooling process. The

positions of the ducts traverse the length of the MERWS via the overhead roof trusses.

### **S-835/G Shelter Kit Passageway**

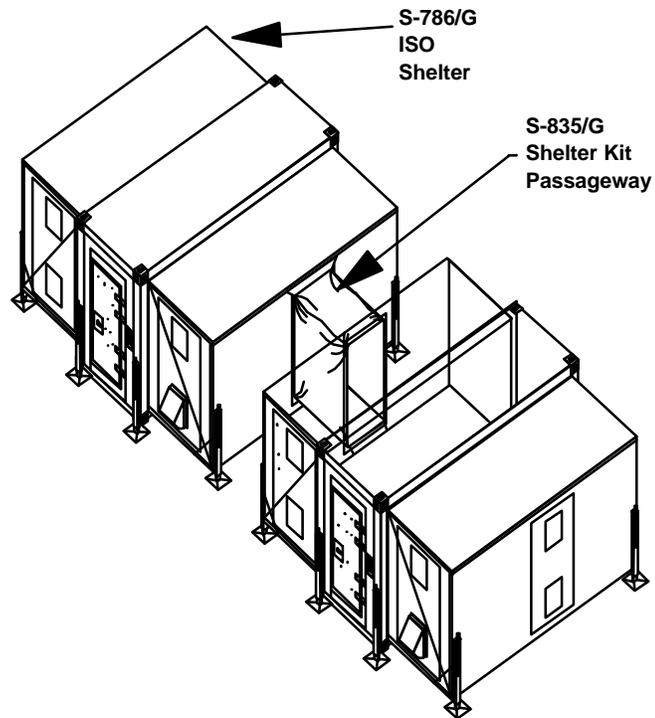
The S-835/G is a collapsible passageway that enables the shelter suite to adjoin its S-786/G shelters. A 58.5- by 77-inch close-out panel is removed prior to installing the shelter kit passageway. The hinged frame of the S-835/G expands in the opening with a coated polyester fabric attached. There is a 6-foot wide ramp with each S-835/G to allow movement between the S-786/Gs (see figure 3-6). The S-835/Gs enable movement from one shelter to another without being exposed to the elements. The S-835/Gs are collapsed when not in use and transported in one or more of the S-786/Gs. Six S-835/Gs are in the shelter suite.

### **Marine Corps Expeditionary Shelter System**

The Marine Corps expeditionary shelter system (MCESS) is a family of standardized containers that are complexable. They can be designed to fit the user. Adjoining corridors link the MCESS systems providing a weathertight seal. Containers are rough terrain container handler transportable and can be lifted by helicopter.

**Rigid MCESS.** The rigid MCESS is a standard 20-foot container. Most Marine tactical air command squadrons have four 10-foot and three 20-foot rigid MCESSs.

Each MCESS has removable side walls enabling complexing with other MCESS units. The electromagnetic interface (EMI) version does not have removable walls, but it may still be attached to other units through the use of adjoining corridors.



**Figure 3-6. S-835/G Shelter Kit Passageway.**

**Knockdown MCESS.** The knockdown MCESS is a standard 20-foot container. The knockdown MCESS has removable side walls facilitating complexing with other units. If heavy equipment is not available, the structure can be constructed by hand in 30 minutes.

### **Nonorganic Shelter Options**

Shelters not organic to the MTACS may be used to house the TACC. These shelters could include maintenance tents, clamshell

shelters, and K-span shelters. When these alternate shelter options are used, the MTACS may not possess adequate organic equipment and personnel to support the use of the structure. Augmentation in the form of engineer, environmental control, and electric power personnel and equipment may be required.

**Maintenance Tent (Canvas and Metal Frame).** Similar to a general purpose tent, the maintenance tent does not provide a “clean” environment for TACC automated equipment.

**Sprung or Clamshell Shelter (Fabric and Frame).** The clamshell shelter is a durable, civilian-built tent with an A-frame system covered with high-grade fabric. There are eight clamshell shelters embarked on maritime positioning force ships. These shelters are the 50A-BBA-7CC series. They can completely enclose the TACC environment (dust free). The clamshell shelter can be relocated and constructed easily.

**K-Span (Rolled Steel and Expeditionary Structure).** The K-Span is a steel building constructed on site using one machine for seam sealing. A concrete foundation is constructed below the shelter. The K-span is expeditionary, inexpensive, and quick to assemble (after the site is prepared). It can be de-seamed for repacking.

### **Power Distribution System**

The power distribution system portion of the shelter suite uses selected components of the Marine Corps P-100 PDS to facilitate delivery and distribution of power. The delivery and distribution of electric power are from mobile electric power (MEP) generator assets of the Marine tactical air command squadron (i.e., MEP-803A, MEP-006A, and MEP-007As) via the power distribution

system panels to the S-786/Gs, MERWS, air conditioners, and other select components of the TACC.

### **CABLE SETS, REELS, AND PALLETS**

Cable sets, reels, and pallets are used to transport, interconnect, and distribute power among the various TACC shelters. Cable sets consist of all signal and power cables required to apply power to the system and exchange voice and data with other equipment and command and control agencies. Cable reels are used to carry individual cables during transport.

### **ANCILLARY EQUIPMENT**

#### **Power Equipment**

The TACC uses organic, mobile electric power generators ranging from 30 to 100 kilowatts for its power requirements.

#### **Environmental Control Units**

The TACC uses 60 hertz air conditioning units ranging from 18,000 to 60,000 British thermal units capacity to regulate the temperature within various TACC components.

## **SYSTEM LIMITATIONS**

### **Data Link Dependency**

TACC displays depend on automated input from other sensor-equipped, data link-capable agencies. Information from agencies is normally based on their radar picture which may be subject to line of sight limitations. Airborne early warning aircraft and advances in technology assist in overcoming shortfalls in presenting a complete air situation. In addition, establishing data links with multiple data link-capable units will provide an expanded, redundant air situation presentation.

### **Vulnerability to Electronic Detection**

The TACC has a large electronic signature generated by its vast data and voice communications equipment. Effective planning and employing dispersion techniques and emission control measures maximize the TACC's survivability.

### **Lack of Mobility**

The Marine tactical air command squadron does not have the organic assets needed to support the movement of TACC equipment. MTACS external support requirements include materials handling equipment and motor transportation augmentation.

## **EQUIPMENT UPGRADES AND REPLACEMENTS**

### **Intelligence Analysis System**

The intelligence analysis system will automate the MAGTF intelligence activities of direction, collection, processing, production, and dissemination of critical tactical intelligence from embedded data bases and multiple sources. Interoperability with other systems such as Navy tactical command system-afloat, joint deployable intelligence support system, and all Marine air-ground intelligence systems will be maintained to ensure a common intelligence picture of the battlefield.

### **Tactical Combat Operations System**

The tactical combat operations system will provide automated assistance to collect, sort, process, disseminate, and display combat information. Tactical combat operations (TCO) system will provide friendly order of battle information and interoperability throughout the MAGTF.

### **Advanced Field Artillery Tactical Data System**

The advanced field artillery tactical data system is an automated fire support command and control system that enables the MAGTF to integrate rapidly all supporting arms assets into maneuver plans via a digital data communications link. It will replace the fire support command and control system fielded in fiscal year 1994. AFATDS will automate the fire planning, tactical fire direction, and fire support coordination required to support naval forces maneuvering from the sea and subsequent operations ashore. The fully functional AFATDS will support the timely exchange of fire support information and target processing essential to survival on the

modern battlefield through the integration of artillery, rockets, mortars, naval surface fire support, and close air support.

### **Global Command and Control System**

The global command and control system is a flexible, evolutionary, interoperable joint C4I system which replaced the Worldwide Military Command and Control System (WWMCCS) as the joint command and control system standard in August 1996. GCCS provides a fused and shared picture of the battlespace with the essential planning and assessment tools required by combatant commanders and their subordinate commanders. GCCS also supports a modern, client-server architecture using commercial, open systems standards and will reduce the number of information systems in use today through the ongoing Department of Defense migration strategy. GCCS is evolving from a baseline of existing command and control systems. This baseline has served as the cornerstone for the rapid implementation of an initial system that is capable of fulfilling the most critical user requirements. As new GCCS versions are subsequently fielded, existing legacy systems will be replaced. The common functional, physical, and operational characteristics of GCCS are based on a single, common operating environment. All future joint, Service, and CINC-specific command and control applications must be compatible with this common operating environment. The goal is to achieve a fully integrated, single GCCS in which all applications have a common look and feel. GCCS mission-essential applications include the—

- 1 Joint Operation Planning and Execution System (JOPES). JOPES is the integrated command and control system used to plan and execute joint military operations. It is a combination of joint policies, procedures, personnel, training, and reporting structures supported by automated data processing on GCCS. The capabilities of the JOPES mission applications support

translation of National Command Authorities policy decisions into planning and execution of joint military operations. These applications are used by MAGTF planners for deployment and employment planning.

- 1 Global Reconnaissance Information System (GRIS). GRIS supports the planning and scheduling of monthly sensitive reconnaissance operations theater requests. The joint staff staffs these requests through the Office of the Secretary of Defense, the Central Intelligence Agency, and the State Department for National Security Council approval. Incoming reconnaissance formatted messages are received by an automated message handling system, validated, and passed to the GRIS application for automated processing and data base update. GRIS generates all reconnaissance messages and also monitors the monthly execution of theater reconnaissance missions approved in the previous month. GRIS is used by the joint staff and theater commands that exercise operational command over airborne reconnaissance assets.
- 1 Evacuation System (EVAC). EVAC collects and displays information about U.S. citizens located outside the United States as collected by U.S. State Department embassies and consulates. It accesses the data base server via a telecommunication network from a GCCS-compatible client.
- 1 Fuel Resources Analysis System (FRAS). FRAS provides fuel planners with an automated capability for determining supportability of a deliberate or crisis action plan and for generating the time-phased bulk petroleum, oil, and lubricants required to support an OPLAN. FRAS facilitates review of the fuel requirements of a proposed, new, or revised OPLAN and assesses adequacy of available resources to support crisis action planning. Requirements can be generated, and analyses performed for the overall OPLAN and for regions within the OPLAN, as well as by Service and within Service by regions. Two or more

OPLANs can be combined into a single OPLAN for analysis. The requirements generated can be varied through the use of intensity tables and consumption data extracted from the logistics factors file or with the Service-provided data system.

- 1 Global Status of Resources and Training System (GSORTS). GSORTS provides information on the status of units with respect to personnel, equipment, and training. Query and display capabilities include categories of units (e.g., ships, fighter aircraft, ground forces), specific types of units (e.g., frigates, armor battalions, F-18s), and specific units (displays detailed status information).
- 1 Theater Analysis and Replanning Graphical Execution Toolkit (TARGET). TARGET contains a set of planning tools designed to support the operational planner during crisis action procedures. These tools allow planners and operators to accomplish tasks through rapid access to required documents and information sources as well as analysis, multimedia, and teleconferencing tools.
- 1 Joint Deployable Intelligence Support System (JDISS). JDISS applications provide access to national, theater, and tactical intelligence sources through the joint architecture for intelligence. JDISS provides protocols for connectivity and interoperability with intelligence systems that are required to support forces during peacetime, crisis, and war. It includes the protocols to access intelligence link (INTELINK) at the secret classification level. JDISS is an intelligence dissemination service that enhances the sharing of intelligence information electronically over the secret internet protocol router network (SIPRNET). INTELINK provides intelligence dissemination by using networked information discovery, retrieval, and browsing services. Its “point and click” technology makes intelligence products widely available to users and producers of intelligence.

- 1 Joint Maritime Command Information System (JMCIS). JMCIS is the foundation for the GCCS-fused operational battlespace picture. It provides near-real-time ground, sea, and air tracks. JMCIS receives input from different systems and can interface with other systems. It uses a core service known as “unified build” to provide geographic display, contact correlation, and track data base management. The JMCIS unified build served as the basis for the original GCCS common operating environment, which has evolved into the defense information infrastructure common operating environment.

### **Tactical Electronic Reconnaissance Processing and Evaluation System**

The tactical electronic reconnaissance processing and evaluation system (TERPES) will provide the capability to identify and locate enemy radar emitters from data recorded by EA-6B aircraft and received from other intelligence sources. TERPES processes near-real-time data link information and recorded EA-6B data.

### **Common Aviation Command and Control System**

This interim TACC equipment will be replaced by the common aviation command and control system (CAC2S) and its associated communications suite. Once fully fielded, the CAC2S will replace the equipment currently fielded in the MACCS. It is envisioned that CAC2S will enable any aviation command and control node to perform the mission of the current MACCS agencies via common, menu-driven functionality. CAC2S will provide a standardized hardware suite which includes a server, workstations, TADIL processors, and communication equipment. CAC2S software will consist of standardized components (to ease the maintenance and logistics efforts) along with TACC specific applications.

## **AN/TYQ-82**

The tactical data communications processor, the AN/TYQ-82, will provide a single configuration shelter for receiving and transmitting tactical data within the Marine air command and control system. The AN/TYQ-82 can interface with a TADIL-J capable platform, allowing the TACC to participate on the JTIDS/TADIL-J network. It may also be deployed as a stand-alone relay platform. The AN/TYQ-82 receives tactical data from its host and transmits this data to all units on the TADIL-J network. In return, the AN/TYQ-82 provides TADIL-J messages received from the TADIL-J network to the host system.

The AN/TYQ-82 consists of a Gichner Model 1497 lightweight, multipurpose shelter containing the radio set AN/URC-107(V)10, workstation with a multichannel interface unit and associated equipment, printer, and a fibre channel local area network interface to the host platform. The system provides operator facilities to allow control of the JTIDS terminal, including start, stop, initialization, building, and editing of the network design load. The system has the capability to remote workstations for air command and control functions. It is also capable of being powered by tactical generators or commercial power sources.

The system can transition from a transport mode to an operational mode within 60 minutes. It can be transported by rotary- and fixed-wing aircraft, rail, truck, and ship with all internal operating equipment contained within the shelter. The M107 heavy variant high mobility multipurpose wheeled vehicle is the prime mover for the AN/TYQ-82. See figure 3-7.

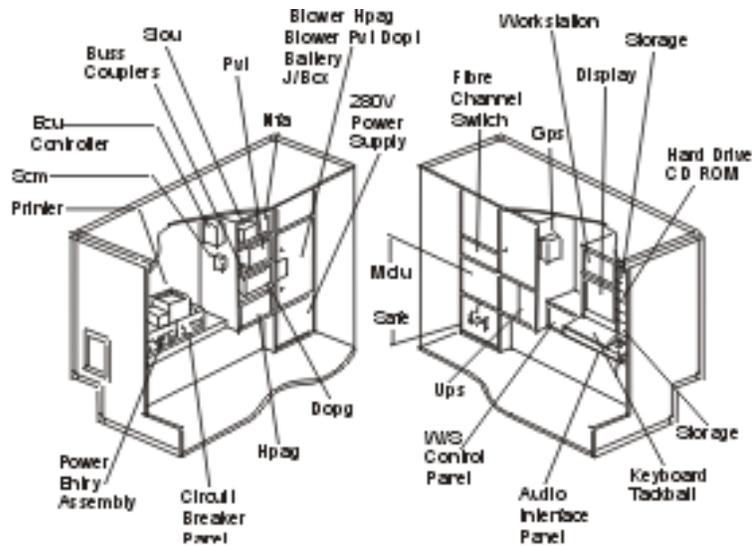


Figure 3-7. AN/TYQ-82.

### Theater Battle Management Corps Systems

Theater battle management corps systems (TBMCS) is a battle management system used for planning and executing air operations. TBMCS provides a complete tool kit to manage and plan the overall war and the daily air war. TBMCS is an Air Force-developed program formed by the consolidation of several existing segments: CTAPS, combat intelligence system (CIS), and the wing command and control system (WCCS). CTAPS is used to plan and execute air operations. CIS is used to optimize component and unit-level intelligence functions and to provide the warfighter with the most accurate and timely intelligence data available. WCCS is an Air Force application used to provide a secure, accurate, timely, and automated system affording a composite view of command and control information for wing commanders and their battlestuffs. WCCS

supports effective decisionmaking during exercises and operational contingencies. These systems implement a consistent software architecture which integrates the flow of information among them. TBMCS is a joint system that can be used to—

- | Build the target nomination list (TNL), the air battle plan (ABP), and the ATO.
- | Monitor the execution of the air battle and replans, as required.
- | Plan routes, ensuring airspace deconfliction.
- | Build the airspace control order.
- | Provide weather support.
- | Manage resources (e.g., aircraft, weapons, fuel, logistics).
- | Gather information on the enemy, battle results, and friendly forces.
- | Analyze information to determine strategies and constraints.
- | Identify potential targets and propose an optimal weapons mix.
- | Provide for support and protection of ground forces.
- | Plan countermeasures and frequency assignments.

The Marine Corps will purchase only the CTAPS equivalent functionality and the targeting and weaponeering module (TWM) (the follow-on to RAAP) within CIS. The WCCS segment will not be used by the Marine Corps.

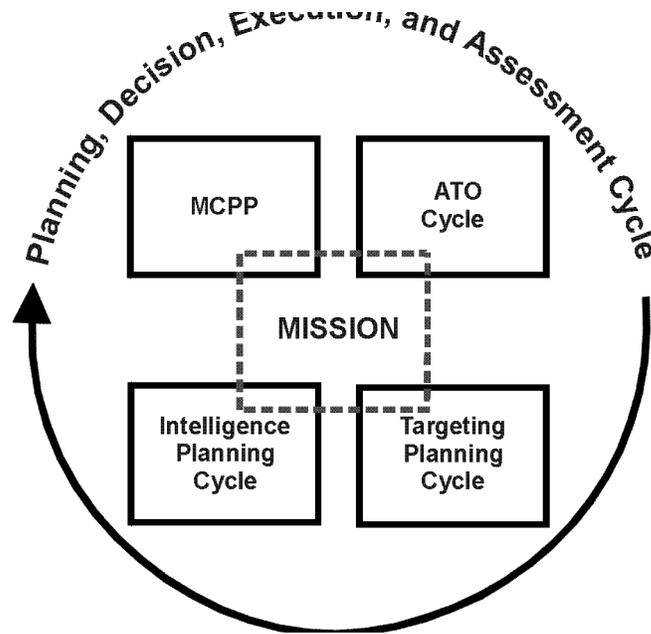
## Chapter 4

# Planning

Marine aviation planners facilitate and optimize the use of ACE assets to provide a means for responsive and effective air operations. ACE planners must be knowledgeable of ACE asset employment considerations to execute the six functions of Marine aviation. These considerations are collectively applied when developing a cohesive aviation plan to support MAGTF operations. FMFM 5-70, *MAGTF Aviation Planning*, and FMFRP 5-71, *MAGTF Aviation Planning Documents*, address additional considerations for employing the ACE.

TACC personnel provide the Marine air-ground task force with responsive air support in a complex and dynamic environment. To plan air operations effectively, TACC personnel must understand the Marine Corps planning process (MCP) and the MAGTF's planning, decision, execution, and assessment (PDE&A) cycle. When the MAGTF is operating as part of a joint force, they must also understand the joint air planning and execution process, and how it interfaces with the MAGTF. When the MAGTF is operating in a joint environment, all air operations must be coordinated and deconflicted with the air capable components of the joint force.

The TACC PDE&A cycle, used to support MAGTF air operations, is continuous from receipt of a mission until the termination of the operation. The TACC PDE&A cycle is driven by several interrelated processes: the Marine Corps planning process, the ATO cycle, the targeting planning cycle, and the intelligence planning cycle (see fig. 4-1, page 4-2).



**Figure 4-1. PDE&A Cycle.**

Aviation planning within the MAGTF is a continuous process that takes into account the current situation, previous actions, and future requirements. The ACE is actively involved in the air planning process at three levels: the aviation combat element, the MAGTF command element, and the joint force headquarters.

At the aviation combat element level, ACE planners initiate the planning process to develop requisite operations orders upon receipt of mission tasking by the MAGTF. During each day of the operation, the ACE is involved in evaluating yesterday's air tasking order, executing today's ATO, developing tomorrow's ATO, and planning the day after tomorrow's air tasking order.

At the MAGTF command element level, the ACE provides assistance to the MAGTF G-3 air section by completing necessary aviation planning actions. The G-3 air officer and his staff interface between the MAGTF commander and the ACE battlestaff at the TACC. They provide the MAGTF commander with aviation expertise at the command level. The presence and assistance of the G-3 air officer allows the MAGTF commander to develop his plans with a thorough understanding of aviation capabilities and limitations. The staff functions of the G-3 air officer and his staff do not circumvent the command relationship between the MAGTF commander and the ACE commander nor do they replace or duplicate the functions of the TACC.

At the joint or multinational headquarters level, the ACE planners must coordinate and deconflict MAGTF air operations with the other air capable components of the joint force. The ACE's planning effort is kept on track by a common understanding of the mission and the commander's intent (part of every mission) two levels above, and through liaison among the ACE staff, the MAGTF staff, and Marine liaison officers at the joint air operations center.

Aviation planning is not the exclusive domain of the MAGTF and ACE commanders. The ground combat element (GCE) and the combat service support element (CSSE) provide vital input into the aviation planning process. As GCE and CSSE commanders conduct their own planning, they address aviation requirements and submit requests for aviation support to the MAGTF commander, who considers them for inclusion in the ACE operations or frag order.

### **CONCEPT FOR PLANNING**

The ACE staff's operational planning begins upon receipt of the mission (warning order) from the MAGTF commander. The ACE

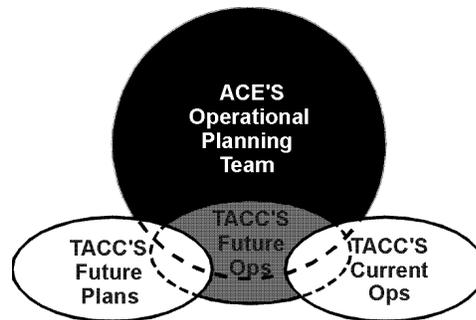
commander will analyze the mission and issue initial planning guidance to start the planning process. The air operations planning process is characterized by long- and near-term planning efforts.

### **Long-Term Planning**

This portion of the planning phase is predominantly conducted by the TACC's future plans. Future plans concentrates on aviation operations that will occur beyond the next ACE mission change, looking at macro-level air operations planning, based on the MAGTF and ACE commanders' initial planning guidance and stated objectives. Future plans develops the initial plan and estimates for MAGTF air operations in support of the assigned mission and creates the ACE support plan. The ACE support plan is transitioned to the operational planning team for OPORD or FRAGO detailed preparation. The TACC's future ops forms the nucleus of the operational planning team (figure 4-2).

### **Near-Term Planning**

Near-term planning is conducted by TACC's future ops. Future ops is responsible for developing air operations plans until the next ACE mission change, based on guidance received from the ACE commander. This plan is structured to follow the framework of the long-term plan previously developed by the TACC's future plans. Future ops takes the ACE support plan, developed by future plans, and forms an operational planning team (directed by the future ops orders development officer) to develop ACE OPORDs or FRAGOs and conduct current planning for aviation events that occur beyond the ATO being planned but short of the next FRAGO being developed. Future ops also develops an apportionment recommendation for the ACE commander. The ACE commander either concurs with the recommendation or modifies it and presents an apportionment recommendation to the MAGTF commander.

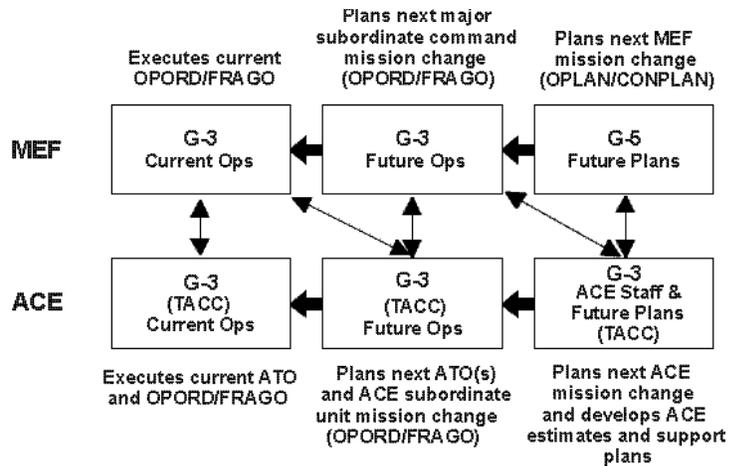


**Figure 4-2. Ace Operational Planning Team.**

The MAGTF commander then makes an apportionment decision by approving or modifying the ACE commander's recommendation. Future ops takes the apportionment decision, collects input from supported units within the MAGTF, and integrates preplanned requests for support (e.g., joint tactical air strike requests and assault support requests) into the air tasking order. ATO construction and dissemination culminate the near-term planning efforts.

### **THE MARINE CORPS PLANNING PROCESS**

The operational planning continuum starts for the ACE upon receipt of a mission or mission change from higher headquarters. It parallels the MAGTF planning process (see fig. 4-3, page 4-6). The ACE is key in the development of the MAGTF OPORD or FRAGO so it follows the same MCPP procedures as the MAGTF in its initial OPLAN development.

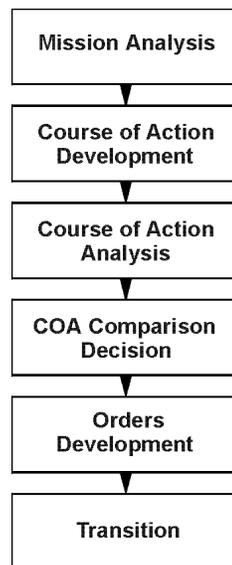


**Figure 4-3. MEF/ACE Planning Interaction.**

MAGTF planning is accomplished by the G-5 and G-3 planning teams. ACE planning is done by the ACE staff under the cognizance of the ACE G-3 and the TACC's future ops and future plans. The MAGTF G-5 future plans focuses on new missions for the force. The ACE staff coordinates with the MAGTF G-5 to receive input regarding ACE support for new MAGTF missions or mission changes. The TACC's future plans will take this input and produce ACE estimates of supportability and support plans for the mission change. The MAGTF G-3 future operations focuses on producing new frag orders to support changes to the mission for major subordinate commands and leads the integrated planning effort. The TACC's future ops coordinates with the MAGTF G-3 future operations to receive input for development of the ACE OPORD or FRAGO. The MAGTF G-3 current ops executes the plan and assesses its effectiveness. The TACC's current ops will coordinate with the MAGTF G-3 current ops to receive input regarding immediate requests requiring alteration of the current ATO. The TACC's

future ops will also coordinate with the MAGTF G-3 current ops to receive requirements that need to be sourced in the next ATO. Operational planning is a continuous process from the receipt of a mission to termination of the operation. It requires extensive coordination between the ACE and MAGTF planning staffs.

MAGTF operations are planned using the six-step Marine Corps planning process. The Marine Corps planning process (see fig. 4-4) provides a logical and orderly method to plan operations. Each successive step in the process is linked. The output from one step becomes the input for the next. The Marine Corps planning process



**Figure 4-4. Marine Corps Planning Process.**

breaks the total planning process into more manageable portions for the commander and his staff. The three tenets which guide the Marine Corps planning process are—

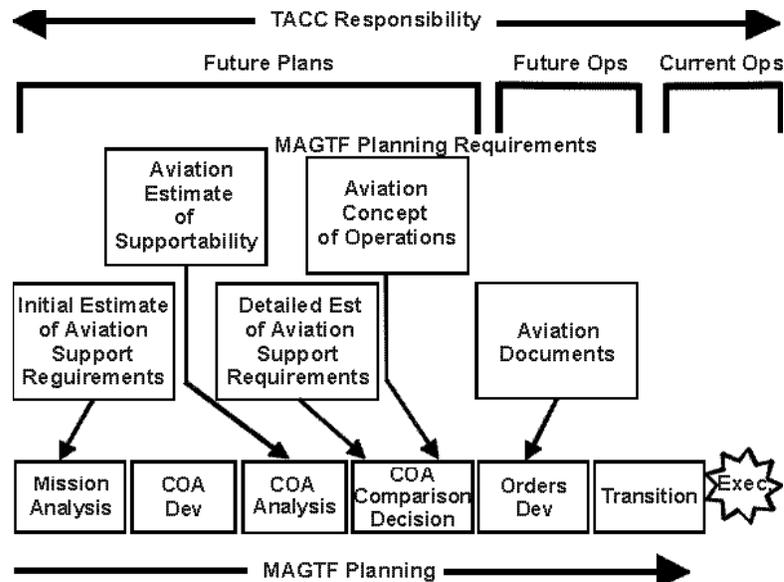
- 1 Top down guidance. Top down guidance provides common direction to ensure unity of effort.
- 1 The single battle concept. The single battle concept focuses the efforts of all MAGTF elements to accomplish the mission.
- 1 Integrated planning. Integrated planning uses the six warfighting functions (i.e., maneuver, intelligence, fires, logistics, command and control, and force protection) as the foundation for plan development.

## **AVIATION PLANNING PRODUCTS**

As the MAGTF begins detailed planning for the operation, the ACE task-organizes to provide and establish aviation support and command and control on order. Throughout the MCPP, ACE planners fulfill MAGTF planning requirements by creating specific aviation planning products (i.e., initial estimate of aviation support requirements, aviation estimate of supportability, detailed estimate of aviation support requirements, aviation concept of operations, and aviation documents). These aviation planning products are provided by the ACE to the MAGTF commander to support the MAGTF OPT's planning effort. Figure 4-5 depicts where, in the MAGTF's planning effort, specific aviation planning products are required as well as the TACC staff responsible for their development.

### **Initial Estimate of Aviation Requirements**

The TACC's future plans prepares an initial estimate of aviation requirements as soon as preliminary information about the assigned mission or operation is available. The initial estimate is presented to



**Figure 4-5. Aviation Planning Products.**

the MAGTF commander during the MAGTF OPT’s mission analysis step. The estimate may include only the number and type of aircraft and command and control agencies required. The initial estimate is deduced from the ACE estimates of enemy aviation capabilities and the general mission of the MAGTF.

**Aviation Estimate of Supportability**

The TACC’s future plans completes a supportability estimate which summarizes significant aviation related aspects of the situation as they might influence any courses of action proposed and evaluates how aviation assets can be best employed to support these courses of action. The aviation estimate of supportability is provided to the MAGTF commander prior to the MAGTF OPT’s course of action

comparison and decision step. At a minimum, the aviation estimate of supportability—

- 1 Provides the course(s) of action that can best be supported by the ACE.
- 1 Outlines advantages and disadvantages of possible courses of action.
- 1 Identifies significant aviation limitations and/or problems of an operational or logistical nature.
- 1 Highlights measures that can be taken to resolve existing aviation problems including requesting additional theater assets.

### **Detailed Estimate of Aviation Support Requirements**

Detailed planning of ACE requirements commences after the MAGTF commander issues the concept of operations. The TACC's future plans constructs the detailed estimate of aviation support requirements. This estimate identifies the number and type of aircraft and the command and control facilities required to support the MAGTF concept of operations. The detailed estimate of aviation support requirements is provided to the MAGTF commander following the MAGTF OPT's comparison and decision step. It will include the—

- 1 Number of aviation and command and control assets required by type.
- 1 Quantity of fuel necessary to support the aviation element.
- 1 Quantity of ordnance required by type.
- 1 Quantity of organic and external special equipment required by type (e.g., materials handling equipment, slings, winches).

## Aviation Concept of Operations

The aviation concept of operations summarizes the support that assigned aviation and aviation support units will provide to execute the Marine air-ground task force's concept of operations. An aviation combat element task organization is completed, which includes all aviation support units needed for the units specified in the detailed estimate of aviation support requirements. The aviation concept of operations is incorporated into the air operations annex of the operations order. The aviation concept of operations is general in nature and provides an overall picture of how Marine aviation operations are to be executed. It should answer the following questions:

- | Which units are involved?
- | What are they required to do?
- | When will they do it?
- | Where will they do it?
- | Why is it being done?
- | How is it going to be done?

## Preparing Aviation Documents

The TACC's future ops prepares the required aviation documents for the operation during orders development. Preparing aviation documents varies with the nature and complexity of the operation and can include ALLOREQs or AIRSUPREQs.

## ATO CYCLE

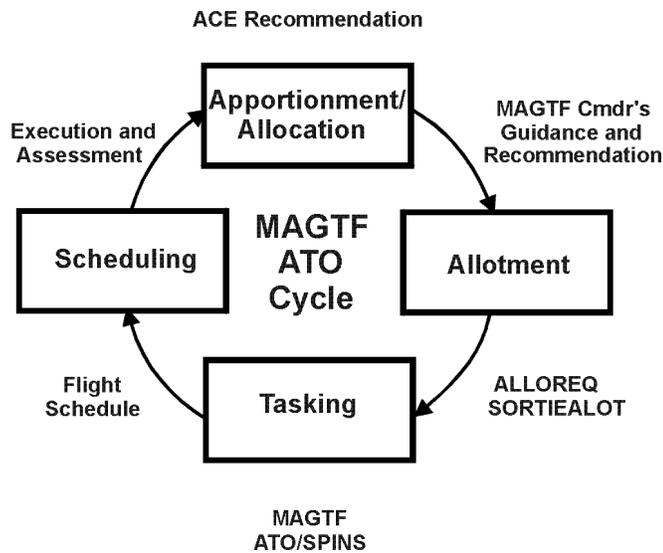
The ATO cycle is an integral part of the MAGTF planning process. It provides a concept of aviation operations for a 24-hour period. By using and completing the cycle, planners can ensure that finite aviation assets are used to achieve their maximum effect with correct prioritization based on the main effort. The precise ATO tasking timeline from commander's guidance to the start of ATO execution is specified by the joint force commander but normally spans a 36- to 72-hour period. The MAGTF air tasking cycle is divided into four phases: apportionment or allocation, allotment, tasking, and scheduling. Refer to FMFM 5-70 for more information concerning the MAGTF air tasking cycle.

For operations that involve joint or combined forces, the six-step joint air tasking cycle is used to plan joint air missions. It begins with the JFC's air apportionment process and culminates with the combat assessment of previous missions. In joint operations, the MAGTF will conform to the joint air tasking cycle. The MAGTF and joint air tasking cycles are depicted in figures 4-6 and 4-7 (on page 4-14).

There are at least four air tasking orders at any time: the ATO(s) undergoing assessment (yesterday's), the ATO in execution (today's), the ATO in production (tomorrow's), and the ATO in planning (the day after tomorrow's).

## TARGET PLANNING CYCLE

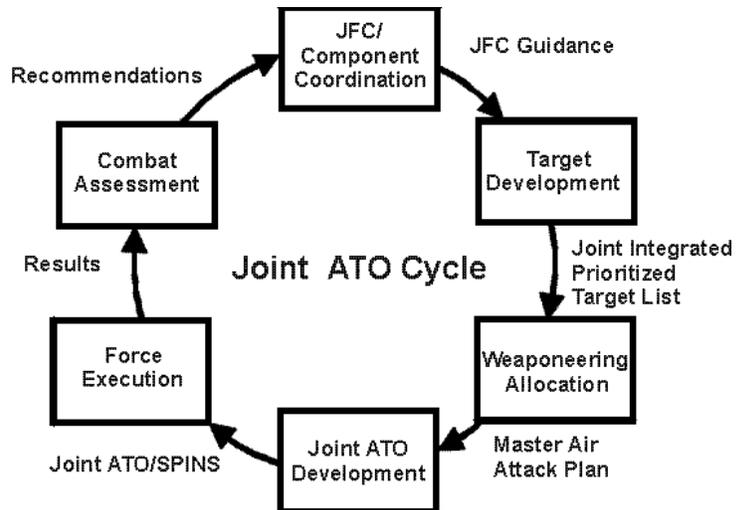
Once the MAGTF promulgates the commander's guidance and intent, the major subordinate commands submit their prioritized requirements for aviation support. The MAGTF validates and prioritizes all aviation requests and forwards this tasking to the ACE for



**Figure 4-6. MAGTF Air Tasking Order Cycle.**

analysis. The product of this assessment is an apportionment recommendation, which is the determination and assignment of the total expected effort by percentage and/or priority that will be diverted to the various air operations and/or geographic areas for a given period of time.

While awaiting the approved apportionment, the ATO planning cell in future ops determines the number of sorties available based on asset location, availability, crew cycles, aircraft capabilities, etc. These assets, in the form of sorties, are flown out, by unit, across the ATO day. If other factors on the day of execution supersede the planned flow (e.g., weather, paucity of targets), the planned sorties would stand alert for the duration of their planned mission time.



**Figure 4-7. Joint Air Tasking Order Cycle.**

Once the apportionment is approved, the ATO development officer in future ops prepares an air allocation request that lists, by mission type, the projected use of ACE sorties. Depending on the theater joint force air component commander, requests for joint sorties may be requested either concurrently as a subparagraph on the ALLOREQ or submitted separately in air support request format. The joint force air component commander will subsequently release a SORTIEALOT message that approves or alters the ALLOREQ to meet the joint force commander's intent. The ALLOREQ and AIR-SUPREQ are MAGTF products typically prepared and submitted on behalf of the MAGTF commander by the TACC's future ops.

Combat assessment is conducted in the ATO planning cell of future ops as a precursor to the weaponeering board. The weaponeering board should consist of the—

- | Deputy G-3.
- | Aviation logistics division representative.
- | Future ops ground watch officer.
- | Orders development representative.
- | Support planners.
- | Future plans representative.
- | Airspace and air defense planners.
- | Strike planners.
- | Future ops intelligence watch officer.
- | Future ops officer.

Combat assessment is a combination of battle damage assessment, as analyzed by the G-2/BDA cell and presented to the intelligence watch officer, and munitions effectiveness assessment, as analyzed by the weaponeering board based on input from the flying units. The output of this collaborative assessment is a potential reattack recommendation or internal (ACE) alteration of tactics, aircraft configuration, etc., to elevate weapons systems' lethality and asset survivability. The nominations for reattack are forwarded to the MAGTF for approval and incorporation into the master air attack plan (MAAP). The MAGTF develops the MAAP, which will outline in tabular form, the targets, precedence, effect, and system (weapon) to attack target.

The ATO planning cell in future ops extracts the aviation-specific targets from the MAGTF MAAP and, coupled with the approved and prioritized target reattack nominations, conducts weaponeering

and force application analysis to give detail to the flow plan. Once the ACE assets are expended against the aviation directed targets, a certain number of targets may be left unsourced.

Unsourced targets may, if approved by the MAGTF commander, be forwarded up to the joint force level for common sourcing. If those targets remain unsourced at the joint level, the MAGTF will determine if the targets warrant a change on the day of execution (e.g., reflow and included as secondary targets against sourced targets or pulled and included as updated targets as part of the ATO update process supported by the ACI target validation section) or are renominated and included on subsequent ATOs.

The outputs of the ATO planning process are the paper products (e.g., target planning worksheets, SPINS inputs, unit remarks, execution checklists, frequency changes, check-in procedures) that are passed through the ATO development officer to the ATO production cell in future ops, where the plan is entered into the electronic planning medium (i.e., CTAPS). A rough draft is passed back through to the ATO development officer for conversion and ultimate transmission to the theater level to merge into the joint ATO.

## INTELLIGENCE PLANNING CYCLE

### Preliminary Intelligence Estimate

The preliminary intelligence estimate furnishes the commander with the intelligence data necessary to formulate basic decisions and assist in developing planning guidance. Aviation intelligence preparation of the battlespace (IPB) is useful throughout the planning process. IPB can graphically depict threat—

- | Radar horizons and optimal mission engagement ranges for ground-based air defenses.
- | Aircraft combat radii at different configurations.
- | Tactical air-to-surface missile (TASM) ranges, optimal launch points, time and distance factors.
- | Vital areas and their associated missile engagement zones and fighter engagement zones.
- | Terrain masking for routing helicopterborne forces.
- | Gaps in integrated air defense system radar.
- | Weather graphics to depict optimal altitudes for flight operations.

IPB can graphically display friendly C2 measures, location of high value airborne assets (HVAAAs), weather, etc., relative to the threat.

## **Intelligence Estimate**

Intelligence gathering against enemy forces is a continuous process that begins immediately after receipt of the initiating directive and continues throughout the operation. The intelligence estimate addresses characteristics of terrain in the area of operations; general strength, disposition, and composition of enemy forces; anticipated weather and conditions for the operational timeframe; locations of civilian population concentrations; and places having specific law of war restrictions. This estimate should also address—

- 1 Intelligence requirements.
- 1 Preparation of collection plans.
- 1 Processing and dissemination techniques.
- 1 Collection of information.
- 1 Dissemination of updated information.

To maximize effectiveness, intelligence estimates, and threat analyses must be prepared with respect to friendly force capabilities and intentions and should emphasize how the threat will impact the ACE mission.

## **OTHER PLANNING CONSIDERATIONS**

The following planning considerations are embedded in the aviation PDE&A cycle.

### **Aviation Command, Control, and Communications Planning**

The ACE is supported by the Marine air command and control system for the command and control of ACE assets. The ACE G-3 and

G-6 sections, in conjunction with the Marine air control group S-3/S-6 and subordinate S-3/S-6 sections, prepare a communications estimate of supportability based on the proposed courses of action. The G-6 section coordinates communication requirements with the MAGTF G-6 including frequency requirements, data links, and communications security. Appendix C provides the current voice and data communications nets used by the TACC. The ACE G-3 and the TACC battlestaff develop the air control plan which includes airspace control measures (e.g., control points, handover points, return to force procedures), air defense control measures (e.g., combat air patrol positions, destruction areas), asset allocation, and establishment of priorities of effort to support the concept of operations.

### **Assault Support Planning**

Preliminary assault support estimates are based on the MAGTF commander's guidance and intended concept of operations. Missions and tasks assigned to assault support aircraft include combat assault transport, air delivery, aerial refueling, air evacuation, TRAP, air logistical support, and battlefield illumination.

### **Antiair Warfare Planning**

Some degree of local air superiority is usually established in the area of operations to permit the conduct of operations at a given time and place without prohibitive interference by the enemy force. The ACE tasks organic assets and coordinates outside requirements to provide antiair coverage for the MAGTF. Successful accomplishment of antiair warfare requires that the complete capabilities of the MAGTF be merged into an integrated air defense system. This system must be capable of operating independently or as an integral part of the overall amphibious or joint task force antiair warfare

system. Anti-air warfare includes air surveillance, control, and weapons employment. It also includes offensive anti-air warfare (OAAW). An extensive intelligence preparation of the battlespace is required to assist the commander to plan for viable OAAW targets. Refer to FMFM 5-50, *Anti-air Warfare*, for a detailed discussion of anti-air warfare.

### **Offensive Air Support Planning**

The MAGTF's inherent combat power is enhanced through the application of combined arms. The MAGTF integrates aviation assets with organic fire support assets to effectively support the scheme of maneuver. The MAGTF commander uses offensive air support throughout the operational spectrum to assist in attaining objectives. The firepower, mobility, and flexibility provided by offensive air support are critical to establish favorable conditions for close, deep, and rear operations.

### **Air Reconnaissance Planning**

Timely reconnaissance is required for intelligence updates, initial mission planning, and follow-on damage assessments. In addition to manned aircraft, the MAGTF controls unmanned aerial vehicle assets which must be integrated and deconflicted within the air-space control plan. Air reconnaissance does not conduct targeting but provides target acquisition and collects information used in the targeting process.

### **Information Warfare Planning**

Information warfare (IW) consists of actions taken to achieve information superiority by affecting information-based processes, adversary information, information systems, and computer-based

networks while defending one's information, information-based processes, information systems, and computer-based networks. IW capitalizes on the growing sophistication, connectivity, and reliance on information technology. The ultimate target of IW is the information-dependent process, whether human or automated. Intelligence and communications support are critical to conducting offensive and defensive IW. IW supports the national military strategy but requires support, coordination, and participation by other United States Government departments and agencies, as well as commercial industry.

IW, as a responsibility of the ACE, falls under the purview of the ACE G-3 and covers all endeavors of the ACE. The ACE G-3 must formulate and execute a plan that uses the assets available from other areas of the ACE staff. This plan must use all of the appropriate intelligence assets available to the ACE G-2 in the ACI, the technical expertise resident within the ACE G-6 and the Marine wing communications squadron, and the technical expertise available within the MTACS. This plan should be flexible, understandable, useable, and cover defensive and offensive aspects of IW. Command and control warfare is an application of information warfare in military operations and employs various techniques and technologies to attack or protect a specific target set: C2.

### **Command and Control Warfare Planning**

Command and control warfare (C2W) is the integrated use of operational security, military deception, psychological operations, electronic warfare, and physical destruction, mutually supported by intelligence, to deny information to influence, degrade, or destroy adversary command and control capabilities while protecting friendly command and control capabilities against such actions. C2W accomplishes this partly by controlling the electromagnetic spectrum and includes such tasks as disrupting a weapon's targeting

capabilities, denying or exploiting enemy communications, receiving electronic indications of imminent enemy action, and deceiving an enemy intelligence collection effort. The planning of command and control warfare operations should be integrated with planning of the force's overall operations for electronic warfare elements to make the greatest contribution to the MAGTF effort. Refer to Joint Pub 3-13.1, *Joint Doctrine for Command and Control Warfare (C2W)*, for a detailed discussion of command and control warfare.

## **Chapter 5**

# **Operations**

Air command and control enables the ACE commander and battle-staff to provide responsive, timely, and effective aviation support to assist the MAGTF commander in prosecuting maneuver warfare on land or sea. The TACC facilitates the use of ACE capabilities as a maneuver force. Although there are operational and organizational differences when the TACC is employed in amphibious and joint or multinational operations, the basic principles of TACC operations and employment are the same.

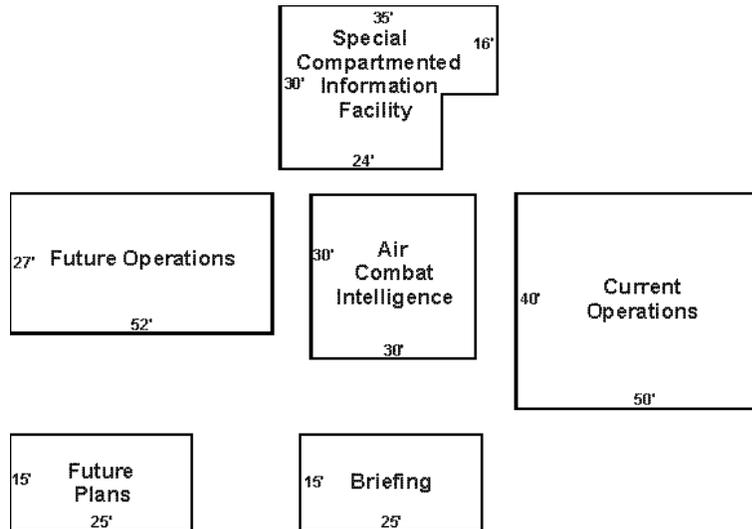
### **EMPLOYMENT**

The TACC is capable of task-organizing a system to meet the capabilities requirements necessary to support its designated mission. The single most important consideration when determining mission supportability is that there is only one TACC within a MAGTF's area of operations. The TACC's capabilities cannot be divided to support one mission without significantly degrading the capabilities of the remaining echelon. Examples of TACC employment packages are the TACC site, the tactical air direction center site, the echelon site, and the austere TACC site.

#### **TACC Site**

Functioning as the senior MAGTF air command and control agency, this configuration provides the ACE commander with the capability to perform the complete array of TACC tasks, as

discussed in chapter 2. A TACC site may also be referred to as a “Marine TACC” to designate the TACC’s capability and the level of support provided to the MAGTF. The traditional TACC is employed during scenarios involving high-tempo air operations. It includes a fully automated TACC capability which uses the preponderance of the Marine tactical air command squadron’s equipment and personnel and will most likely require additional personnel and equipment augmentation. See figure 5-1.



**Figure 5-1. Preferred TACC Layout.**

### **Tactical Air Direction Center Site**

The tactical air direction center (TADC) site is task-organized to perform all or most of the TACC’s tasks but is employed in a subordinate role to a senior air command and control agency. An example would be during expeditionary operations when the Marine TADC

is subordinate to the Navy TACC. In this circumstance, the Marine TADC and the Navy TACC will normally exchange roles during the phasing of control ashore process. However, a TADC site subordinate to a Marine TACC may also be established within a MAGTF's area of operations to provide the ACE commander with additional coordination support. In this case, a TADC site may be established at a forward operating base or remote airfield to coordinate MAGTF aviation activities within a specific area. In these examples, the TADC may be assigned to perform specific functions as directed by its senior agency or the ACE commander, or it may mirror the senior agency's functions in the capacity as an alternate TACC or in preparation for assuming sector airspace management functions. Depending on the TADC's role, it may be task-organized to perform senior supervisory planning and coordination functions provided by a TACC. The TADC site's equipment capabilities will depend strictly on its assigned role and functions.

### **Echelon Site**

An echelon site is an operational site capable of performing the majority of TACC tasks but will usually be operated for a limited period to allow the TACC to relocate. During operations, the echelon site incrementally assumes TACC functions and continues to perform functions until the TACC site is prepared to resume its functions. Assets for the echelon site may come from the echeloning TACC or from another Marine aircraft wing's MTACS. The overall emphasis for the echelon site is to allow the TACC's relocation with little or no affect on operations.

### **Austere TACC Site**

The austere TACC site is capable of performing a limited number of TACC tasks. Employed in situations involving low-intensity air operations, the austere TACC is task-organized to perform specific,

identified functions in this type of environment. These functions will normally be limited to providing data link connectivity with other air command and control agencies and limited supervision of subordinate Marine air command and control system agencies. The austere TACC site may also provide limited ACE planning functions and liaisons to organizations external to the MAGTF.

### **MAGTF OPERATIONS**

The ACE is task-organized to conduct air operations. It includes the MACCS agencies necessary to perform aviation command and control functions commensurate with the size and mission of the MAGTF.

The TACC, when employed, is incrementally phased ashore as a TADC responsible to the commander, amphibious task force (CATF) for the landward sector of the amphibious objective area (AOA). With the MAGTF fully established ashore and as a prerequisite to terminating an amphibious operation, the CATF will delegate authority for command and control of air operations in the AOA to the commander, landing force (CLF). The landward TADC will become a TACC, while the CATF's Navy TACC becomes a TADC. After terminating the amphibious operation, the AOA will be dissolved, and an airspace sector will be established. The Marine TACC then provides command and control of aviation assets in its sector.

### **Marine Expeditionary Force**

A Marine expeditionary force is supported by a fully capable TACC. The ACE commander plans and directs MAGTF air operations and related aviation activities from this facility. The TACC maintains communications with higher, adjacent, and external

headquarters, subordinate aircraft groups, and other MACCS agencies. The TACC exchanges tactical digital information in the joint and multinational arena through data link interface.

### **Marine Expeditionary Unit**

The ACE typically associated with a Marine expeditionary unit cannot perform all six functions of Marine aviation. It contains the necessary assets and agencies to conduct operations ashore for a limited time. The MEU can be supported from its sea base or from shore-based facilities in a joint environment. Centralized command and control of air operations are retained by the Navy TACC.

## **AMPHIBIOUS OPERATIONS**

During an amphibious operation, MACCS air control facilities (whose functions parallel those of the Navy's tactical air control system) are established ashore. Once operational ashore, the Marine TACC is subordinate to the Navy TACC (afloat) and monitors appropriate circuits and gains situational awareness in preparation for assuming command and control within an assigned sector.

### **Tactical Air Direction Center**

During the build-up of landing force combat power ashore, the CLF establishes a Marine TADC to act as a coordinating agency between the other MACCS agencies ashore and the Navy TACC afloat. The TADC is identical in organization, capabilities, and facilities to a TACC. The essential difference between a TACC and a TADC is a matter of command authority over the assigned sector. MACCS agencies remain responsible to the Navy TACC (afloat) even when a TADC is established, unless directed otherwise.

### **Tactical Air Command Center (Ashore)**

When the CLF is capable of assuming control of all air operations in the AOA, the CATF will delegate sector airspace management responsibilities to the CLF. The CLF's TADC then becomes the Marine TACC, while the Navy TACC (afloat) reverts to a subordinate status of TADC (afloat) yet remains capable of assuming the TACC role.

### **Phasing Control Ashore**

Phasing control ashore is the process whereby the authority to control and coordinate certain functions is passed from the CATF to the CLF. Checklists, used to ensure that various operational functions are resident at the Marine TADC, may be used as a tool to measure the readiness of the Marine TADC to assume sector airspace control functions. Operation orders and local standing operating procedures should be reviewed for such documentation. In addition to checklists, other prerequisites must be met before TACC functions can be passed to the Marines. In general, the prerequisites are—

- 1 Certain air control facilities or agencies must exist ashore.
- 1 Facilities or agencies must be able to communicate on certain required nets.
- 1 Facilities or agencies must be able to perform the command, control, and communications functions.

When conducting amphibious operations, the transition from a sea-based to a land-based air command and control system follows a five-phase process.

Depending on the scale of operations, some or all of the phases may be completed. The sequence of phasing control ashore is the—

- 1 Initial phase—includes the arrival of various “supporting arms controllers” ashore, namely the tactical air control party, forward observers, and naval gunfire spot team. Terminal control of offensive air support and assault support missions is performed by the tactical air control party.
- 1 Second phase—is characterized by the arrival ashore of two specific agencies: the direct air support center and the ground combat element’s senior fire support coordination center. During this phase, terminal control of offensive air support and assault support missions are still performed by the tactical air control party. The DASC begins to exercise control and coordination functions for offensive air support and assault support.
- 1 Third phase—is characterized by the arrival of the TAOC ashore. Control and coordination authority over offensive air support and assault support missions are exercised by the DASC, while the TAOC, with the sector antiair warfare coordinator, begin exercising control and coordination of air defense missions within their assigned sector.
- 1 Fourth phase—is highlighted by the establishment of the tactical air direction center ashore. During the fourth phase, the aviation command and control functions listed above are performed by those agencies and facilities outlined in the third phase. The introduction of the TADC does not alter the actual control and coordination situation; however, the TADC will interpose itself between the Navy TACC (afloat) and other ACE agencies ashore in preparation for the passage of command authority.
- 1 Fifth phase—is characterized by the transfer of command responsibility from afloat to ashore and is distinguished by the reversal of TACC and TADC roles between the CATF and CLF. During this phase, the Marine TACC is established ashore and

the Navy TACC reverts to a TADC role. The landing force ACE normally moves ashore during this phase.

## **JOINT OR MULTINATIONAL OPERATIONS**

As the senior MACCS agency, the Marine TACC provides the MAGTF's interface with other Service or country's air command and control agencies in joint or multinational operations. The MAGTF commander retains operational control of organic aviation assets. During joint operations, the MAGTF commander may make sorties available to the joint force commander for tasking through the JFACC for air defense, long-range interdiction, and long-range reconnaissance. Also, sorties in excess of MAGTF direct support requirements are provided to the joint force commander for tasking to support other joint force components or the joint force as a whole.

### **Joint or Multinational Planning**

MAGTF air operations must be integrated into joint force air operations planning. The ACE commander and MACCS must represent the MAGTF's needs and requirements for air operations (relative to airspace control and air defense operations) in the MAGTF area of operations.

### **Liaisons**

The MAGTF must ensure proper coordination and integration of Marine Corps forces with joint forces. Representation on joint staffs and agencies, including liaison personnel, is essential to ensure proper employment of forces. The ACE commander, in exercising authority to command, control, and coordinate MAGTF air operations through the TACC, will ensure joint staff or agency and

liaison representation to the JFACC or joint force commander's staff, joint air operations center (JAOC), airspace control authority, and area air defense commander. The ACE sources personnel for liaison billets from within the Marine aircraft wing.

One of the TACC's contacts within the joint air operations center is the Marine liaison officer (MARLO). The MARLO is the MAGTF commander's representative to the JFACC, AADC, and/or ACA for the exchange of current intelligence and operational data with the Marine Corps component. The MARLO is responsible to the JFACC for matters pertaining to MAGTF operations to ensure coordination for mutual understanding and unity of purpose and action. See appendix B for information on augmentees and liaison personnel. The MARLO's responsibilities are—

- 1 Coordinating MAGTF interest for air defense, long-range interdiction, and long-range reconnaissance missions.
- 1 Maintaining awareness of the status of all Marine cross-force tasked air missions and keeping JAOC members advised of significant changes to those missions.
- 1 Coordinating and resolving MAGTF issues regarding air operations, airspace, and air defense matters with JAOC personnel.

### **Interoperability**

Effective air operations by joint force's components hinge on the ability of air C2 agencies to effectively integrate and exchange air combat situation displays and information on a real-time basis. Extensive use of TADILs facilitate the rapid, secure, and simultaneous exchange of combat information relative to air operations.

Planning for interoperability includes detailed planning and coordination of equipment, personnel, and terminology.

### BATTLE MANAGEMENT

During the execution of the current ATO, a myriad of permutations will occur that will require an OODA loop process (see figure 5-2). If current ops can be viewed as a timepiece, where the macro view of executing ACE current ops in its totality is a master OODA loop, then individual cells and problems require an OODA process as smaller gears synchronously moving to produce a timely output.

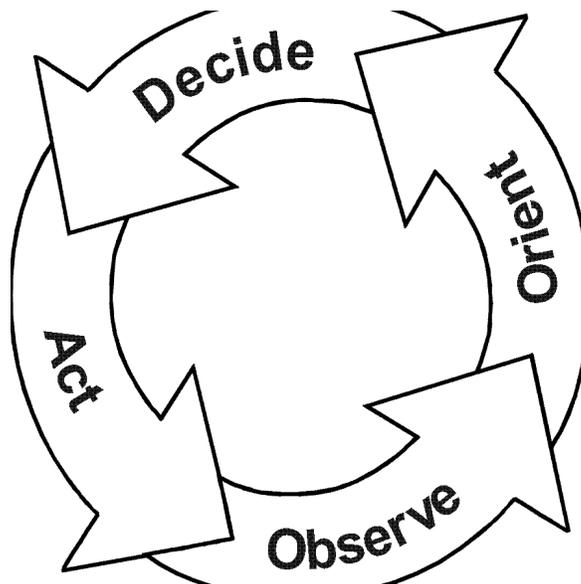


Figure 5-2. The OODA Loop.

Two key processes of current ops are providing simultaneous and synchronous aviation support to the close and deep battles.

The DASC maintains a constant dialog with the close battle cell (as well as the deep battle and assessment cells, if required) in the TACC to ensure preplanned and immediate sorties apportioned to the GCE are handled on a priority basis as determined by the GCE air officer. The allocated sorties are typically launched either based on a preplanned flow (ATO estimated time of departure) or as requested by the supported unit (e.g., on call, strip alert, divert).

The deep and close battle cells monitor and adjust the flow and assignment of allocated sorties as the tactical situation dictates. The assessment cell, based on emerging threats and priority targets of opportunity, provide recommendations and cost and benefit analysis to the SWO regarding the retasking of assigned assets to alternate missions. The assessment cell analysis differs from that done by the close and deep battle cells in that it is further out in scope and time (typically more than two hours). The assessment cell monitors the flow of GCE apportioned sorties and analyzes any requirements that exceed the allocation. This analysis occurs in consonance with the intelligence watch section (threat and enemy situation), ground watch section (MAGTF priority change), deep battle cell (impact on deep battle as assets are shifted to the GCE), and the SWO if a surge effort was anticipated and approved.

### **SUCCESSION OF COMMAND AND CONTROL**

One of the TACC's principal tasks is to prescribe succession of command and control responsibilities within the MACCS to compensate for any serious degradation within the command and control system. The specific procedures for succession of command

and control vary with the available communications and the tactical situation.

## **TACC SITING CONSIDERATIONS**

Selection of a tactical site is the result of balancing the demands of a variety of factors. The final site selection should satisfy the basic requirements of a TACC.

### **Mission Requirements**

Mission requirements will drive the location of the TACC. The MAGTF commander's requirements may place additional limitations on possible TACC site locations.

### **Suitable Terrain**

The TACC requires an area approximately 150 meters by 150 meters for adequate site setup. The area should be relatively flat with a surface slope not exceeding 10°.

### **Terrain Masking**

Terrain surrounding the potential TACC site should provide natural concealment for the TACC's equipment and shelters. When feasible, masking terrain should be interposed between the TACC and vulnerable emitter sources (antennae farms and generators) and between the TACC and the primary enemy avenues of approach.

### **Proximity to Key Assets and/or Nodes**

The primary role of Marine aviation is to support the MAGTF. The key to providing the MAGTF with outstanding support is the ability to coordinate and communicate effectively with the other elements of the MAGTF (i.e., CE, GCE, CSSE). When selecting a site for the TACC, the ACE commander should place the TACC where it can best conduct communications and coordination. Proximity to other key commanders and/or command and control nodes allows for more rapid response to the MAGTF elements and decreases the potential for misunderstandings. There is no requirement for the TACC to be collocated with other aviation assets in an airfield. Insistence on locating the TACC at an airfield (e.g., distant from the rest of the MAGTF) may handicap the ACE's ability to effectively support the MAGTF. If and when such connectivity problems occur, it is the obligation of the ACE to provide communications back to the airfields and to ensure the aviation effort properly supports the MAGTF. The ACE should not place the burden of establishing connectivity on the other elements of the MAGTF. To provide this connectivity to the airfields as well as to the components of the MACCS, the Marine wing communications squadron will collocate with the TACC to provide most of the TACC's voice and data communications connectivity. Site considerations should allow sufficient space and logistical support for the employment of the TACC and Marine wing communications squadron's equipment (e.g., antenna farms, satellite dishes, and multichannel equipment).

### **Communications Engineering**

Communications requirements and communications system vulnerabilities are critical in site selection. Key considerations are line of sight access to other agencies, adequate space for erecting and remoting antennas, and positioning units to take advantage of terrain masking and to support the use of bidirectional antennas.

Proper communications engineering will limit the radio frequency signal susceptibility to collection by enemy electronic devices. Operating limitations of available communications equipment may limit distances between key command and control system nodes. The presence of terrain which may be used to mask signals or to support signal defraction could be considered. Availability of host nation public telephone and telegraph facilities is a critical element of site selection. To a limited degree, geomorphic characteristics of the surrounding environment may also be a consideration. Electro-magnetic emission sources surrounding the potential site may inhibit the proper use of communications assets in some areas.

### **Physical Security**

The selected site should provide adequate space to allow for installation of a barbed wire barrier at least 30 meters from any major structure. The site should be sufficiently isolated to preclude easy access by local inhabitants. When practical, the TACC should be collocated with other ACE or MAGTF assets to enhance security team augmentation.

### **Accessibility**

The TACC should be located in an area that provides a sufficient transportation infrastructure to allow rapid and easy movement of personnel between the TACC and supporting or external agencies.

### **Dispersion**

The TACC should be adequately dispersed from other key command and control nodes to prevent easy identification or prioritization as an enemy target. TACC equipment and shelters will be emplaced using maximum separation.

### **Logistics Supportability**

The TACC location must be logistically supportable. Access to heavy equipment support, refueling of electrical generation equipment, and availability of motor transport augmentation are considerations.

### **Cover and Concealment**

Because of its large footprint, the TACC is difficult to conceal from a determined enemy. Proper use of cover and concealment can reduce the TACC's vulnerability to enemy detection. The existence of foliage to screen key structures, the presence of overhead cover, and natural depressions where key TACC elements can be hidden are characteristics of a suitable site. The availability of space for deception sites and avoidance of areas where excessive dust is generated may also be considered when selecting a site.

## **OCCUPATION PROCESS**

Once a site is selected, the occupation process begins. First, a surveillance liaison reconnaissance party consisting of Marines from MTACS, MAW Headquarters, MWHS, and Marine wing communications squadron will conduct a survey of the intended site. After equipment locations are finalized, each location will be marked by paint, stakes, etc., and a map of the area will be prepared. The advance party representatives will serve as guides for emplacement of their respective section's equipment to ensure proper installation in accordance with the TACC layout plan. TACC equipment will be time-phased to ensure that critical assets arrive first.

The initial equipment required to begin site setup includes generators, materials handling equipment, and communications equipment. They are followed by the shelter suite, associated computers, and other communications-electronics vans and cabling. Remaining items are phased into the site last.

## **SITE SECURITY CONSIDERATIONS**

### **Barriers**

At a minimum, triple strand concertina should be erected surrounding the TACC compound. If possible, the wire should be erected so that major facilities are further away from the perimeter than the normal distance a grenade can be thrown (i.e., 30 meters or 100 feet).

### **Guard Coordination**

Coordination for the site security should be conducted with the Marine wing headquarters squadron that is normally tasked to support compound security. The sensitive compartmentalized information facility will be collocated with the TACC. Security elements for the TACC and the sensitive compartmentalized information facility will be combined. A guard post at the compound entrance and sufficient guard personnel to maintain observation of the entire perimeter at all times are required for adequate security.

### **Security Procedures**

Measures taken to enhance compound security include strict adherence to noise and light discipline; current, up-to-date access rosters (which include names, ranks, and social security numbers of site

personnel) with the compound guard and in TACC work sections; and the establishment of a vehicle drop-off point at least 500 meters from the compound. Security actions should be coordinated to ensure that adequate communications, reaction plans, and identification procedures exist.

### **SITE HARDENING CONSIDERATIONS**

A pre-hardened facility is the preferred method of employing the TACC. If pre-hardened facilities are not available, the TACC equipment and shelters should be hardened unless deemed unfeasible.

#### **Revetment or Hardening of Generators**

Generators will be revetted or hardened at the earliest opportunity. Revetting or hardening reduces the electronic signature and increases the generator's survivability against destruction. Generator exhaust can be vented via ducting to a baffle (some are constructed using a buried 55-gallon drum) to reduce the infrared radiation signature. The most efficient and effective means of building revetments is with a bulldozer.

#### **Hardening of Operating Shelters**

Sandbags can be used to harden the operating shelters. Sandbags may be preferred because a bulldozer could cause significant disruptions to the surrounding area and leave a tell-tale site signature. Air-raid shelters and trenches should be dug near the TACC to provide for personnel safety in case of air attack.

### **Number of Bunkers**

A number of bunkers are required to support the TACC. Guard bunkers are required at entrances to the TACC compound, air-raid shelters are required near the TACC and in billeting areas, and fighting positions and bunkers for crew-served weapons may be required if MTACS personnel are included in a sector of the base defense or rear area security plan.

## Chapter 6

# Training

The training of the ACE battlestaff and TACC crewmembers should be implemented and managed in accordance with the training management principles and guidance established in MCO 1553.3, *Marine Corps Unit Training Management*; MCRP 3-0A, *Unit Training Management Guide*; and MCRP 3-0B, *How to Conduct Training*. The primary tools for the conduct of training at the individual and unit level are the training and readiness (T&R) syllabus and its associated supporting software application, the Aviation Training and Readiness Information Management System (ATRIMS), as well as the Marine Corps Combat Readiness Evaluation System (MCCRES).

### INDIVIDUAL TRAINING

#### Entry Level TACC Training

TACC crewmembers are not identified by a unique military occupational specialty (MOS) designator. TACC crewmembers are assigned from various air control, aviation, airfield services, intelligence, signals intelligence, and weather related MOSs. They receive their training through related skills progression courses and managed on-the-job training in accordance with applicable individual training standards or T&R syllabi.

Most crew positions within the TACC require skilled and experienced operators. ACE battlestaff personnel designated for the

TACC should be qualified in their respective specialty area or MOS. First four personnel are not normally assigned to the TACC.

## **Training and Readiness**

The purpose of the Marine aviation training and readiness program is to provide the commander with standardized programs of instruction for all aviation personnel. The goal is to develop unit warfighting capabilities, not to measure the proficiency of individuals. Syllabi are based on specific performance standards designed to ensure proficiency in core competencies. An effective training and readiness program is the first step in providing the MAGTF commander with an aviation combat element capable of accomplishing any of its missions. The T&R program provides the fundamental tools for commanders to build and maintain unit combat readiness. Using these tools, unit training managers can construct and execute an effective training plan which supports the unit's mission-essential tasks.

## **Core Competency**

Core competency serves as the foundation of the T&R program. Core competency is a specific mission capability shared by all Marines with the same MOS or by all like units in the Marine Corps. It can be specifically defined by those individual or collective capabilities and skills which support those mission-essential tasks expected to be assigned in combat. Derived from doctrinal publications and T/O mission statements, core competency consists of four parts: mission-essential tasks, corps capabilities, core tasks or skills, and core plus tasks or skills.

**Mission-Essential Tasks.** Mission-essential tasks (METs) are those tasks which are critical to the accomplishment of a wartime mission and serve to focus individual and collective training. These

tasks form a baseline common to all like organizations and give the commander some initial requirements on which to base their training. Additional METs may be developed by the commander based on OPLANs, assigned missions, and taskers from higher headquarters. These unit-specific METs form the mission-essential task list (METL) which is a unit-specific, descriptive training document that provides the unit a clear, warfighting focused description of collective actions necessary to achieve wartime mission proficiency.

**Core Capability.** Core capability is the minimum level of performance that can be sustained over time to accomplish wartime missions. It is a quantifiable measurement that may be expressed in terms of tactical units, equipment, crewmembers, or percentage of T/O on hand and a given state of training readiness.

**Core Tasks or Skills.** Core tasks or skills are those minimum essential tasks or skills required to satisfy the mission-essential tasks. Individual or collective in nature, they are defined and developed through an understanding of an organization's core competency. Core tasks and skills are taught at the formal school and through managed on-the-job training (MOJT) as part of a unit-level training program.

**Core Plus Tasks or Skills.** Core plus tasks or skills are individual or collective tasks which enhance the ability of the individual or the unit to accomplish missions expected to be assigned in combat. They may be individual, unit, mission, or environment specific tasks. Competency in these skills is not required to attain the combat qualified certification but may be required to attain the full combat qualified certification.

## TACC Training Progression

Each TACC-specific T&R syllabus is based on a training progression model which provides training officers with a valuable tool for developing training plans (see fig. 6-1). They depict the logical progression of qualifications within the TACC based on a crewmember's MOS, experience level, and assigned crew position. The base of each model contains minimum qualifications necessary for assignment to the TACC. The highest tier of the progression model contains qualifications held by only the most experienced personnel within a unit. Training officers' ability to produce viable training

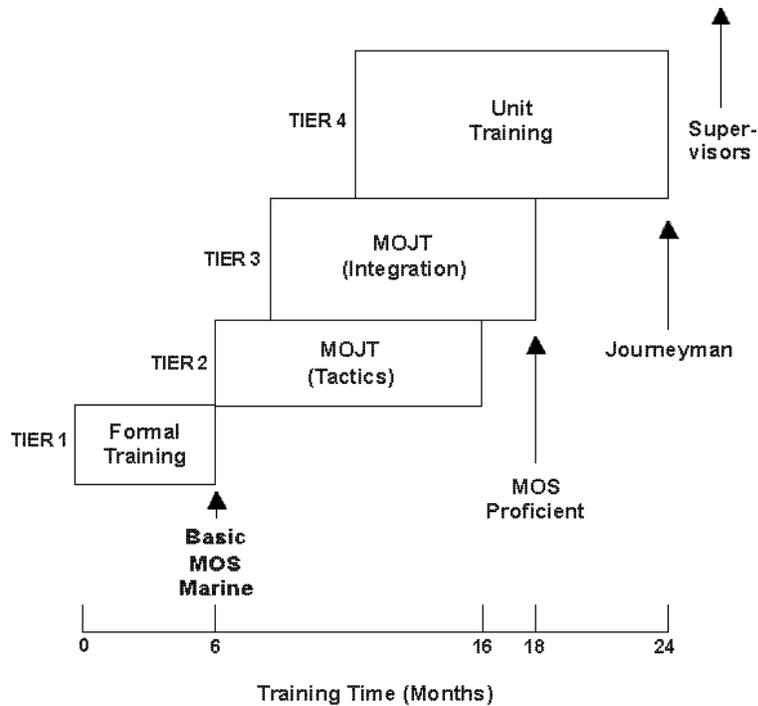


Figure 6-1. Notional Training Progression Model.

plans is enhanced by a clear delineation of qualification progression and an emphasis on the qualification of combat ready and combat qualified personnel. Units will use the model as a point of departure to generate weekly, monthly, quarterly, and annual training plans. The four tiers of the training progression model are combat capable, combat ready, combat qualified, and full combat qualified.

**Combat Capable.** The combat capable tier will be accomplished at the completion of the combat qualification stage of training in the crewmember's primary MOS.

**Combat Ready.** At the combat ready tier, qualifications that are normally made available to fairly inexperienced personnel will be delineated. Personnel begin core competency and develop critical operating skill. This tier should take the individual who is combat qualified in their MOS and make him or her *proficient* in the core skills required of the assigned crew position in the TACC. After successful completion of the combat ready tier, unit personnel move to the combat qualification tier.

**Combat Qualified.** The combat qualification tier will be that portion of the model that produces section (or cell) coordinators (or supervisors) and fully qualified crewmembers. Personnel refine core competencies and hone critical operating skills. Personnel being trained in the combat qualification tier are Marines a commanding officer feels are capable of directing the actions of subordinates during wartime scenarios.

**Full Combat Qualified.** The full combat qualification tier contains special skills. These skills are not a prerequisite to combat qualification or the ability to function as combat leaders. This tier focuses on core plus skill, core competencies and critical MOS skills, skills executed as integrated, and mission-oriented training. A certain

number of full combat qualified individuals must be maintained to accomplish assigned missions or tasks.

**Instructor or Specific Training.** TACC instructor training is not distinct from standard MOS training. It is a compilation of chosen events which qualifies a Marine to serve as an instructor for various levels of the T&R training phases.

In some cases, higher echelon supervisory position training and qualifications may be reflected where the development of a separate T&R syllabus is not practical or warranted. These personnel are the most experienced personnel within a unit.

**Volume V.** TACC-specific T&R syllabi are found within MCO P3500.19, *Aviation Training and Readiness Manual, Volume V, Marine Air Command and Control System (MACCS)*. Each syllabus contains individual training requirements, T&R events, standardized academic lectures, and formal training requirements. T&R events are assigned a numerical weight towards a “combat readiness percentage (CRP),” a sustainment interval, or “refly factor,” and is likewise chained to other related events within the syllabus. Syllabi exist for the TACC enlisted operator (MOS 72XX), TACC officer (MOS 72XX), TACC officer (MOS 75XX), TACC intelligence analyst (MOS 02XX), and TACC intelligence officer (MOS 02XX).

**Combat Readiness Percentage.** The combat readiness percentage is a numerical representation of the percentage of the syllabus in which an individual is proficient. Combat readiness percentages are divided into four categories. Each category is based on the total proficiency percentage MACCS personnel have demonstrated within their respective syllabi. The four categories are—

- 1. Combat capable (60% CRP [100-series training]).

- | Combat ready (70% CRP [200-series training]).
- | Combat qualified (85% CRP [300-series training]).
- | Full combat qualified (100% CRP [400-series training]).

### **Aviation Training and Readiness information Management System**

ATRIMS is a special purpose training management tool designed specifically for training management in Marine aviation and MACCS units. ATRIMS 1-98, Version M (MACCS) is designed to automate the use of TACC T&R syllabi as a training management and decision support tool for the commander and trainer. ATRIMS provides the ability to store and track data related to TACC crew-member training and is capable of producing reports to effectively manage the training effort. Reports include summaries of live and simulated training time; qualifications obtained for individual crew-members; greaseboard summary of all T&R events completed; CRP by individual, crew, or agency; academic training completed; individual deployed time; and a transfer data utility and summary which allows the merge of training records between ATRIMS data bases.

### **ACE Battlestaff Training Responsibility**

The Marine aircraft wing G-3 is responsible for the assignment of individuals to, and the combat readiness of the ACE battlestaff. Marines assigned to the ACE battlestaff shall demonstrate proficiency in accordance with the mission qualifications and designations listed in the applicable T&R syllabus in MCO P3500.19.

### **Commanding Officer, Marine Tactical Air Command Squadron.**

The commanding officer, Marine tactical air command squadron (MTACS), shall ensure the requisite tactical air command center

training for MACG-assigned Marines is accomplished in accordance with the applicable T&R syllabus in MCO P3500.19.

**Wing G-2.** The Marine aircraft wing G-2 shall ensure the requisite TACC training for Marines assigned to the wing G-2 or air combat intelligence is accomplished in accordance with the applicable T&R syllabus in MCO P3500.19 and the *Intelligence T&R Manual*.

**Wing Battlestaff Trainer.** The wing battlestaff trainer shall ensure the requisite training for Marines assigned to other Marine aircraft wing organizations is accomplished in accordance with the applicable T&R syllabus in MCO P3500.19.

Training management of the ACE battlestaff and reporting of CRP is the responsibility of the designated wing battlestaff trainer. The commanding officer, MTACS, and wing G-2 will submit ATRIMS transfer data records of crewmember training to the wing battlestaff trainer for merge and reporting to the wing commanding general on a quarterly basis.

### **Weapons and Tactics Instructor Course**

The weapons and tactics instructor (WTI) course consists of approximately 6 weeks of academics, command and control integration, and flight instruction. Conducted twice annually, it is designed to provide one WTI per squadron or unit per year. The object is to graduate officers who are fully qualified in their MOS and who are capable of planning and executing air-ground missions. During the course, WTI students refine their instructional abilities and hone aviation planning and execution skills during high-intensity, integrated tactical exercises.

## TACC-Related Courses of Instruction

**Tactical Air Commander's Course.** Sponsored by MAWTS-1, the Tactical Air Commander's Course is designed to familiarize senior aviators with MACCS agencies and equipment. The course is designed to enhance the commander's knowledge and ability to conduct combat operations within the context of the six functions of Marine aviation.

**ACE Battlestaff Officer's Course.** Sponsored by MAWTS-1, the ACE Battlestaff Officers Course has been developed for naval aviators or naval flight officers who are now serving or have the potential to serve in the tactical air command center. The course is designed to enhance knowledge of the Marine air command and control system and the air tasking order development process. ACE Battlestaff Course students will develop the air tasking order using CTAPS. After ATO development, the students will execute the ATO within the TACC's current ops.

**Multi-TADIL Advanced Joint Interoperability Course.** The Multi-TADIL Advanced Joint Interoperability Course (MAJIC), sponsored by USFORSCOM, provides detailed information on TADIL operations and management and tactical data systems (TDS) used by the Services. The course trains students in jointly approved concepts, doctrine, procedures, and techniques for integrating, operating, and managing multiple TADILs in joint operations.

**Joint Tactical Information Distribution System Course.** Sponsored by USFORSCOM, the Joint Tactical Information Distribution System (JTIDS) Course provides training in joint planning, employment, operating procedures, and systems capabilities of JTIDS.

**CTAPS Operator or Technician Course.** Sponsored by the USAF Air-Ground Operations School (AGOS), CTAPS Operator or Technician Course (COTC) trains selected individuals in the fundamentals of CTAPS operations. COTC focuses on CTAPS training for individuals required to use CTAPS and are assigned to an AOC, any joint organization, or other closely related facility. The course teaches the fundamental concepts of CTAPS operations and covers the AOC and other related or supporting facilities.

**Joint Air Operations Staff Course.** Sponsored by the USAF Air-Ground Operations School (AGOS), Joint Air Operations Staff Course (JAOSC) focuses on battle management functions performed to integrate air and surface resources into joint combat operations. It provides an understanding of fundamental coordination considerations performed primarily at an AOC or an associated joint or component facility. The course covers threat; basic doctrine, mission and organization of the Services; command, control, and communication systems; intelligence support capabilities; tactical missions and major weapons systems used in joint operations; capabilities and limitations of command and control warfare concepts or strategy; and current CTAPS computer tools used in joint operations.

## **CREW AND AGENCY TRAINING**

At the unit level, the MCCRES is a tool for evaluating mission performance within a set of given standards. Events in the T&R syllabus provide the basis for individual and collective skills which enable units to satisfy the requirements in the applicable volume of the MCCRES.

## Marine Corps Combat Readiness Evaluation System

The MCCRES provides a tool for the commander to evaluate the warfighting capabilities of the unit. It is designed to be a continuous process of training, evaluating results, analyzing feedback, and training again to strengthen identified shortcomings. MCO 3501.9B, *MCCRES* requires a formal unit evaluation once every 2 years. However, an informal program can be established to assess unit combat readiness at any time. By employing the MCCRES standards as a baseline for training, units can identify training needs and orient training towards accomplishing identified training deficiencies.

**Mission Performance Standards.** Mission performance standards are formulated to ensure that MACCS agencies are capable of performing their assigned missions and tasks. Criteria established for mission performance standards are based on a minimum acceptable level of achievement for a specific agency. The MCCRES is designed to enhance combat readiness and ensure that required and realistic training is conducted. Mission performance standards can indicate training proficiency and establish training priorities.

**Tasks.** MCCRES tasks are a series of specific events required to accomplish mission performance standards.

**Key Indicators.** Key indicators are detailed explanations or amplifications of performance criteria provided to assist in the evaluation of tasks.

## **Marine Aviation Planning Problems**

Marine aviation planning problems (MAPPs) are low-cost, low-overhead training exercises that portray military situations on maps and overlays which may be supplemented with, or replaced by, terrain models and sand tables. MAPPs allow commanders to train their staffs to perform tactical planning, special integration, and control functions to support decisions under simulated combat conditions. They are suitable for command and control training from the Marine aircraft wing level down to agency, crew, or section level. MAPPs are especially useful for multi-echelon staff training when commanders desire minimum personnel yet strive to exercise staff planning procedures and techniques.

## **MACCS Integrated Simulated Training Exercise**

The MACCS integrated simulated training exercise (MISTEX) is a combination of the MAPP, simulation, command post exercises, and the informal MCCRES program. The MISTEX's main objective is to bring the MACG together as a fully capable MACCS for employment. MISTEXs should focus on the establishment of necessary communications and data links between MACCS agencies, and incorporate sufficient simulation and master scenario events list items to exercise and analyze system integration, crew coordination, and critical information flow wherever possible. The greatest benefit derived from a MISTEX program is integrated training at the system level. This does not imply that subordinate units cannot benefit from the program. Individual units not only receive the benefit of systems training, but small-unit and individual training objectives can be met.

### **Joint Service Training Exercise**

Sponsored by U.S. Forces Command, joint service training exercises (JSTEs) provide integrated systems training that emphasizes data link operations in the joint arena. JSTEs validate interoperability concepts, tactics, and provide a unique training opportunity without excessive cost.

### **MARINE AIR COMMAND AND CONTROL SYSTEM PERFORMANCE RECORD**

The MACCS performance record (MPR) (NAVMC 2898; PCN 100 01 3588-00) is a tool designed to consolidate MOS applicable training credited to an individual Marine in a single-source document. When used in conjunction with the ATRIMS, the MACCS performance record can provide a unit commander with a comprehensive record of the capability, experience, and weaknesses of a newly joined Marine, or effectively track the progress of Marines during their assignments within the Marine air command and control squadron. The MACCS performance record consists of the following sections:

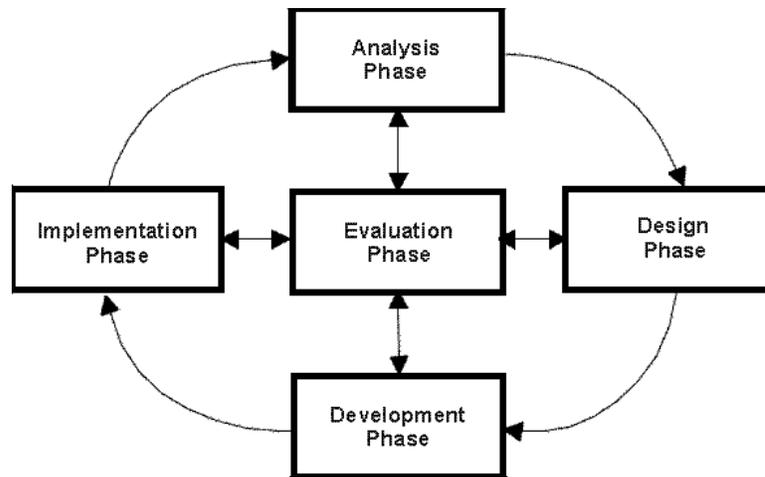
- 1 Section I. Administrative information.
  - n Privacy act statement.
  - n Record of audit.
  - n Formal training records.
- 1 Section II. MOS training qualifications.
  - n MOS qualification records.
  - n Designation certificates.

- i Section III. Managed on-the-job training.
  - n Training summary.
  - n T&R syllabus event evaluations.
  - n Academic training records.
  - n Training time summary.
  - n Transfer data summary.
- i Section IV. General training information.
  - n Individual deployment records or information.
  - n PME or MCI records.
  - n General information or miscellaneous.

## THE SYSTEMS APPROACH TO TRAINING

Unit training management is the application of the Marine Corps training principles and the systems approach to training to satisfy the training requirements of commanders at all levels to accomplish their mission. Guidance concerning unit training management and the process for establishing effective unit training management programs are in MCRP 3-0A. Familiarity with MCRP 3-0A will enhance understanding of the systems approach to training and Marine Corps unit training management principals for application in effective unit training management programs.

The systems approach to training (SAT) consists of five separate functions that can be performed successively by an organization, one person, or assigned to separate individuals. The output of one phase becomes the input of the next. See figure 6-2. Once training is developed and executed by progressing through the phases sequentially, trainers and training managers continually enter and



**Figure 6-2. SAT Overview.**

exit the system at various points, often simultaneously, to revise the training plan, to reimplement training, or to conduct evaluations.

Table 6-1 (on page 6-16) provides an overview of the activities involved in each phase of the SAT process.

**Table 6-1. SAT Overview.**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;"><b>Analysis phase</b></p> <p>Review Marine Corps doctrine:</p> <ul style="list-style-type: none"> <li>  Campaign plans.</li> <li>  Contingency plans.</li> <li>  T/O mission statement for type of units.</li> <li>  Combat plans.</li> </ul> <p>Review higher headquarters, supported unit, and supporting unit METLs.<br/>Determine all specified and implied tasks for all units.<br/>Select METL.</p> <p style="text-align: center;"><b>Design phase</b></p> <p>Relate mission-essential tasks to MPSs from MCCRES volumes.<br/>List collective and individual tasks for subordinate units and Marines that support METL tasks.<br/>Evaluate or assess unit strengths and deficiencies.<br/>Prioritize training of mission-essential tasks.<br/>Design appropriate training plans for units and individuals.<br/>Ensure that all training tasks or objectives are stated as performance, condition, and standards statements.</p> <p style="text-align: center;"><b>Development phase</b></p> <p>Develop training materials and secure support.<br/>Train the trainers.<br/>Staff rehearsal of training plans and lesson plans.</p> <p style="text-align: center;"><b>Implementation phase</b></p> <p>Implement training plans.<br/>Conduct battle staff exercises, unit exercises, FTXs, drills, and individual training.</p> | <p style="text-align: center;"><b>Evaluation phase</b></p> <p>Conduct internal after-action reviews.</p> <p>Review MCCRES or external evaluation feed-back.</p> <p>Review training deficiencies of subordinate units and individuals.</p> <p>Reprioritize tasks in training plans based on assessment of deficiencies.</p> <p>Conduct evaluation during all phases.</p> |
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## Appendix A

### **Manning Requirements for Baseline Marine TACC**

This appendix presents manning requirements for a baseline Marine tactical air command center. Tables A-1 through A-4 describe manning requirements for air combat intelligence, current ops, future ops, and future plans. Manpower requirements for liaison and augmentation billets at the joint targeting coordination board (JTCB) and the joint air operations center (JAOC) are presented as table A-5. Most of the positions within future plans, future ops, and current ops can be sourced from the Marine aircraft wing. Most of the positions in air combat intelligence will require sourcing from outside the Marine aircraft wing.

Position descriptions followed by an asterisk indicate watch positions filled by Marine tactical air command squadron personnel that will most likely require external sourcing. The number in parenthesis following the asterisk indicates the number of personnel MTACS will require for augmentation of the position.

**Table A-1. ACI Manning.**

| <b>Position Description</b>          | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|--------------------------------------|-------------|--------------|------------|
| <b>Air Combat Intelligence</b>       |             |              |            |
| ACIO                                 | LtCol       | 0202         | 1          |
| Asst ACOI                            | Maj         | 0202<br>0207 | 1          |
| ACI chief                            | MSgt        | 0231         | 1          |
| Asst ACI chief                       | GySgt       | 0231         | 1          |
| ACI ops asst                         | Sgt         | 0231         | 1          |
| ACI ops asst                         | Cpl         | 0231         | 1          |
| <b>Intelligence Analysis Section</b> |             |              |            |
| Intel analysis officer               | Capt        | 0202         | 1          |
| Asst intel analysis officer          | Capt        | 0202         | 1          |
| <b>All Source Intelligence Cell</b>  |             |              |            |
| Senior analyst                       | Lt          | 0202<br>0207 | 2          |
| Chief analyst                        | GySgt       | 0231         | 2          |
| Intel analyst                        | SSgt        | 0231         | 2          |
| Intel analyst                        | SSgt        | 0231         | 2          |
| <b>Order of Battle Cell</b>          |             |              |            |
| OB analyst                           | Sgt         | 0231         | 2          |
| OB analyst                           | Cpl         | 0231         | 2          |

**Table A-1. ACI Manning (Continued).**

| <b>Position Description</b>           | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|---------------------------------------|-------------|--------------|------------|
| <b>Imagery Analysis Cell</b>          |             |              |            |
| Imagery interpreter                   | GySgt       | 0241         | 1          |
| Imagery interpreter                   | SSgt        | 0241         | 2          |
| <b>SIGINT Section</b>                 |             |              |            |
| SIGINT officer                        | Lt          | 0206         | 1          |
| SIGINT chief                          | SSgt        | 2621         | 1          |
| SIGINT support clerk                  | SSgt        | 2621         | 2          |
| SIGINT analyst                        | Cpl         | 0231         | 1          |
| <b>Collection Section</b>             |             |              |            |
| Collection officer                    | Capt        | 0202<br>0207 | 1          |
| Asst collection officer               | Lt          | 0202<br>0207 | 1          |
| Collection chief                      | GySgt       | 0231         | 2          |
| Collection clerk                      | Sgt         | 0231         | 2          |
| <b>Targeting Intelligence Section</b> |             |              |            |
| Target intel officer                  | Capt        | 0202         | 1          |
| Asst target intel officer             | Lt          | 0202         | 1          |
| Target intel chief                    | GySgt       | 0231         | 1          |

**Table A-1. ACI Manning (Continued).**

| <b>Position Description</b>          | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|--------------------------------------|-------------|--------------|------------|
| <b>Target Development Cell</b>       |             |              |            |
| Target development officer           | Lt          | 0202<br>0207 | 2          |
| Target analyst                       | SSgt        | 0231         | 2          |
| Target analyst                       | Sgt         | 0231         | 2          |
| <b>Target Validation Cell</b>        |             |              |            |
| Target validation officer            | Lt          | 0202<br>0207 | 2          |
| Target analyst                       | SSgt        | 0231         | 2          |
| Target analyst                       | Sgt         | 0231         | 2          |
| <b>Battle Damage Assessment Cell</b> |             |              |            |
| BDA officer                          | Lt          | 0202<br>0207 | 2          |
| BDA analyst                          | Sgt         | 0231         | 2          |
| BDA analyst                          | Cpl         | 0231         | 2          |
| <b>Intel Plans Section</b>           |             |              |            |
| Intel plans officer                  | Maj         | 0202         | 1          |
| Intel plans chief                    | GySgt       | 0231         | 1          |
| Intel plans analyst                  | Sgt         | 0231         | 1          |

**Table A-1. ACI Manning (Continued).**

| <b>Position Description</b>                   | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|-----------------------------------------------|-------------|--------------|------------|
| <b>Requirements and Dissemination Section</b> |             |              |            |
| R and D officer                               | Capt        | 0202<br>0207 | 1          |
| Asst R and D officer                          | Lt          | 0202<br>0207 | 1          |
| R and D clerk                                 | SSgt        | 0231         | 2          |
| R and D clerk                                 | Cpl         | 0231         | 2          |
| <b>Intel Systems Section</b>                  |             |              |            |
| Systems officer                               | Lt          | 0207         | 1          |
| Systems chief                                 | SSgt        | 0231         | 1          |
| <b>Weather Section</b>                        |             |              |            |
| Weather officer                               | CWO         | 6802         | 1          |
| Weather forecaster                            | SSgt        | 6842         | 1          |
| Weather forecaster                            | Sgt         | 6842         | 1          |
| Weather observer                              | Sgt         | 6821         | 1          |
| Weather observer                              | Cpl         | 6821         | 1          |
| <b>Radio Battalion Detachment</b>             |             |              |            |
| Det commander                                 | Capt        | 0206         | 1          |
| ELINT chief                                   | SSgt        | 2631         | 1          |
| ELINT analyst                                 | Sgt         | 2631         | 2          |
| SIGINT analyst                                | Sgt         | 2629         | 2          |

**Table A-1. ACI Manning (Continued).**

| <b>Position Description</b>                | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|--------------------------------------------|-------------|------------|------------|
| SCI comm op                                | Cpl         | 2651       | 1          |
| <b>TERPES Detachment</b>                   |             |            |            |
| OIC                                        | CWO         | 2602       | 1          |
| Det SNCOIC                                 | GySgt       | 2631       | 1          |
| Maintenance tech                           | SSgt        | 2821       | 4          |
| ELINT analyst                              | Sgt         | 2631       | 5          |
| <b>ACI Total = 24 Officers/65 Enlisted</b> |             |            |            |

**Table A-2. Current Ops Manning.**

| <b>Position Description</b>    | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|--------------------------------|-------------|------------|------------|
| <b>Current Operations</b>      |             |            |            |
| Current ops officer            | LtCol       | 9969       | 1          |
| Asst current ops officer       | LtCol       | 9969       | 1          |
| Ops chief                      | GySgt       | 7041       | 1          |
| Ops clerk                      | Sgt         | 7041       | 2          |
| <b>Systems Control Section</b> |             |            |            |
| C2 watch officer               | CWO         | 25XX       | 2          |
| <b>Radio Central</b>           |             |            |            |
| Watch NCO                      | Sgt         | 2531       | 2          |
| Data/comm tech                 | Cpl         | 4066       | 2          |
| Wireman                        | Cpl         | 2512       | 2          |
| Radio operator                 | LCpl        | 2531       | 8          |
| <b>Ground Watch Section</b>    |             |            |            |
| Ground watch officer           | Maj         | 0302       | 2          |
| Fire support officer           | Capt        | 0802       | 2          |
| Engineer officer               | Capt        | 1302       | 2          |
| Ground watch chief             | SSgt        | 03XX       | 2          |
| TCO operator                   | Cpl         | 7041       | 2          |
| AFATDS operator                | LCpl        | 7041       | 2          |

**Table A-2. Current Ops Manning (Continued).**

| <b>Position Description</b>             | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|-----------------------------------------|-------------|--------------|------------|
| <b>ACE Watch Section</b>                |             |              |            |
| Force protection officer                | Capt        | 75XX         | 2          |
| NBC watch officer                       | CWO         | 5702         | 2          |
| ALD/ordance watch officer               | Lt          | 6004         | 2          |
| Logistics watch officer                 | Lt          | 04XX         | 2          |
| Comm watch officer<br>C2 maint coord    | GySgt       | 25XX         | 2          |
| <b>Intelligence Watch Section</b>       |             |              |            |
| Intel watch officer                     | Maj         | 0202         | 2          |
| Intel watch chief                       | GySgt       | 02XX         | 2          |
| Intel analyst                           | Sgt         | 0231         | 2          |
| ELINT analyst                           | Sgt         | 2631         | 2          |
| <b>Current Operations Watch Section</b> |             |              |            |
| Sr watch officer                        | LtCol       | 75XX         | 2          |
| Sr air coord                            | Maj         | 7202         | 2          |
| Crew chief                              | SSgt        | 7236         | 2          |
| Recorder                                | Sgt         | 72XX         | 2          |
| <b>Deep Battle Cell</b>                 |             |              |            |
| Deep battle tasker                      | Capt        | 7523<br>7525 | 2          |

**Table A-2. Current Ops Manning (Continued).**

| <b>Position Description</b>               | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|-------------------------------------------|-------------|--------------|------------|
| Deep battle tasker                        | Capt        | 7509         | 2          |
| Deep battle coord                         | Capt        | 7509         | 2          |
| UAV tasker                                | Lt          | 9910         | 2          |
| Deep battle recorder                      | Sgt         | 72XX         | 2          |
| Deep battle plotter                       | Cpl         | 72XX         | 2          |
| <b>Close Battle Cell</b>                  |             |              |            |
| Close battle tasker<br>(fixed-wing [FW])  | Capt        | 7523<br>7525 | 2          |
| Close battle tasker (FW)                  | Capt        | 7562         | 1          |
| Close battle tasker<br>(rotary-wing [RW]) | Capt        | 7565         | 1          |
| Close battle tasker (RW)                  | Capt        | 7566         | 2          |
| Close battle tasker (RW)                  | Capt        | 7509         | 2          |
| Air support rep* (2)                      | Lt          | 7208         | 2          |
| UAV tasker                                | Lt          | 9910         | 2          |
| Close battle recorder<br>(FW)             | Sgt         | 72XX         | 2          |
| Close battle plotter (FW)                 | Cpl         | 72XX         | 2          |
| Close battle recorder<br>(RW)             | Sgt         | 72XX         | 2          |
| Close battle plotter (RW)                 | Cpl         | 72XX         | 2          |

**Table A-2. Current Ops Manning (Continued).**

| <b>Position Description</b>              | <b>Rank</b> | <b>MOS</b>           | <b>No.</b> |
|------------------------------------------|-------------|----------------------|------------|
| <b>Air Defense Coordination Cell</b>     |             |                      |            |
| Air defense coordinator                  | Capt        | 7210<br>7204<br>7277 | 2          |
| Air defense recorder                     | Sgt         | 7234                 | 2          |
| Air defense plotter                      | LCpl        | 7234                 | 2          |
| <b>Airspace Control Cell</b>             |             |                      |            |
| Airspace control officer* (1)            | Capt        | 7220                 | 2          |
| Airspace control officer                 | Capt        | 7562                 | 1          |
| Airspace control officer                 | Capt        | 7565                 | 1          |
| Airspace plotter/recorder                | Sgt         | 7242                 | 2          |
| <b>Interface Control/Track Data Cell</b> |             |                      |            |
| Interface control officer                | Capt        | 7210                 | 2          |
| Track data coordinator                   | Sgt         | 7234                 | 2          |
| <b>Battle Damage Assessment Cell</b>     |             |                      |            |
| Sr close battle analyst                  | Maj         | 7566                 | 2          |
| Close battle analyst* (1)                | Capt        | 7208                 | 4          |
| Recorder/CAFMS opr                       | Cpl         | 7041                 | 2          |
| Sr deep battle analyst                   | Maj         | 7523<br>7525         | 2          |

**Table A-2. Current Ops Manning (Continued).**

| <b>Position Description</b>                        | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|----------------------------------------------------|-------------|--------------|------------|
| Deep battle analyst                                | Capt        | 7523<br>7525 | 4          |
| Recorder/CAFMS opr                                 | Cpl         | 7041         | 2          |
| <b>Search &amp; Rescue Coordination Cell</b>       |             |              |            |
| SRCC officer                                       | Capt        | 7566         | 2          |
| SRCC officer                                       | Capt        | 7565         | 2          |
| SRCC recorder* (2)                                 | LCpl        | 72XX         | 2          |
| <b>Current Ops Total = 68 Officers/61 Enlisted</b> |             |              |            |

**Table A-3. Future Ops Manning.**

| <b>Position Description</b>       | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|-----------------------------------|-------------|--------------|------------|
| <b>Future Operations</b>          |             |              |            |
| Future ops officer                | LtCol       | 9969         | 1          |
| Asst future ops officer           | Maj         | 9969         | 1          |
| Operations chief                  | SSgt        | 7041         | 1          |
| Operations clerk                  | Sgt         | 7041         | 1          |
| Operations clerk                  | Cpl         | 7041         | 1          |
| <b>Ground Watch Section</b>       |             |              |            |
| Ground watch officer              | Maj         | 0202<br>0802 | 2          |
| Ground clerk                      | LCpl        | 03XX         | 2          |
| <b>Intelligence Watch Section</b> |             |              |            |
| Intel watch officer               | Maj         | 0202         | 2          |
| Intel analyst                     | Sgt         | 0231         | 2          |
| <b>ATO Development Section</b>    |             |              |            |
| ATO development officer           | LtCol       | 9969         | 1          |
| <b>ATO Planning Cell</b>          |             |              |            |
| ATO planning officer              | Maj         | 7523<br>7525 | 1          |
| Asst ATO planning officer         | Capt        | 7523<br>7525 | 1          |

**Table A-3. Future Ops Manning (Continued).**

| <b>Position Description</b>          | <b>Rank</b> | <b>MOS</b>   | <b>No.</b> |
|--------------------------------------|-------------|--------------|------------|
| Strike planner                       | Capt        | 7523<br>7525 | 2          |
| Strike planner                       | Capt        | 7509         | 1          |
| Strike planner                       | Capt        | 7565         | 1          |
| EW planner                           | Capt        | 7588<br>7543 | 1          |
| Support planner/ATCO                 | Capt        | 7557         | 1          |
| Support planner                      | Capt        | 7562         | 1          |
| Support planner                      | Capt        | 7563         | 1          |
| Support planner                      | Capt        | 7566         | 1          |
| UAV planner                          | Capt        | 9969         | 1          |
| Airspace/control<br>measures planner | Capt        | 7210         | 1          |
| Air defense planner                  | Maj         | 7202         | 2          |
| Air support planner* (1)             | Capt        | 7208         | 1          |
| <b>ATO Production Cell</b>           |             |              |            |
| ATO production officer               | Maj         | 9969         | 1          |
| Asst ATO production<br>officer       | Capt        | 9969         | 1          |
| SPINS/ACP/ADP prod<br>officer* (2)   | Capt        | 72XX         | 1          |
| ATO production chief                 | SSgt        | 7041         | 1          |

**Table A-3. Future Ops Manning (Continued).**

| <b>Position Description</b>                       | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|---------------------------------------------------|-------------|------------|------------|
| ATO production clerk                              | Cpl         | 7041       | 6          |
| <b>Orders Development Section</b>                 |             |            |            |
| Orders development officer                        | Maj         | 9969       | 1          |
| Strike plans officer                              | Capt        | 7523       | 1          |
| Strike plans officer                              | Capt        | 7509       | 1          |
| Strike plans officer                              | Capt        | 7565       | 1          |
| Support plans officer                             | Capt        | 7566       | 1          |
| Support plans officer                             | Capt        | 7562       | 1          |
| Support plans officer                             | Capt        | 7563       | 1          |
| Force protection officer                          | Capt        | 75XX       | 1          |
| C2 plans officer* (1)                             | Capt        | 72XX       | 1          |
| Operations clerk                                  | Sgt         | 7041       | 1          |
| Operations clerk                                  | Cpl         | 7041       | 1          |
| <b>Future Ops Total = 35 Officers/16 Enlisted</b> |             |            |            |

**Table A-4. Future Plans Manning.**

| <b>Position Description</b>                       | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|---------------------------------------------------|-------------|------------|------------|
| <b>Future Plans</b>                               |             |            |            |
| Future plans officer                              | LtCol       | 9969       | 1          |
| Sr planner                                        | Maj         | 9967       | 1          |
| Airspace/air defense planner* (2)                 | Maj         | 7202       | 2          |
| Assault support planner                           | Maj         | 9966       | 2          |
| Strike support planner                            | Maj         | 9965       | 2          |
| Aviation support planner                          | Capt        | 7557       | 1          |
| MAGTF plans chief                                 | GySgt       | 9919       | 1          |
| MAGTF plans NCO                                   | Sgt         | 9919       | 2          |
| MAGTF plans clerk                                 | LCpl        | 9919       | 3          |
| <b>Future Plans Total = 9 Officers/6 Enlisted</b> |             |            |            |

**Table A-5. JCTB and JFACC Liaisons  
and Augments.**

| <b>Position Description</b>                | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|--------------------------------------------|-------------|------------|------------|
| JTCB component rep                         | BGen        | 9903       | 1          |
| JAOC sr Marine LNO                         | Col         | 9907       | 1          |
| Combat ops<br>dep director                 | Col         | 9907       | 1          |
| Combat ops (CO) fighter<br>duty off        | Capt        | 7523       | 2          |
| CO fighter duty off                        | Capt        | 7509       | 2          |
| CO EW rep                                  | Capt        | 7543       | 2          |
| CO tanker rep                              | Capt        | 7557       | 2          |
| CO ADA rep* (1)                            | Capt        | 7204       | 2          |
| CO airspace rep* (2)                       | Capt        | 7208       | 2          |
| JSRC LNO                                   | Capt        | 7566       | 2          |
| BCD (ops) MEF ops<br>LNO                   | Maj         | 0302       | 2          |
| BCD (ops) MEF intel<br>LNO                 | Capt        | 0202       | 2          |
| Combat plans (CP) sr<br>Marine planner LNO | LtCol       | 9969       | 1          |
| CP ATO development<br>planner (strike)     | Capt        | 7523       | 1          |
| CP CAS planner                             | Capt        | 7509       | 1          |

**Table A-5. JCTB and JFACC Liaisons  
and Augments (Continued).**

| <b>Position Description</b>                              | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|----------------------------------------------------------|-------------|------------|------------|
| CP EW planner                                            | Capt        | 7543       | 1          |
| CP tanker planner                                        | Capt        | 7557       | 1          |
| Combat plans<br>helo planner                             | Capt        | 7562       | 1          |
| CP helo planner                                          | Capt        | 7565       | 1          |
| CP plans clerk                                           | Cpl         | 7041       | 1          |
| Campaign plans<br>strategy branch<br>(CPSB) strategy LNO | LtCol       | 9969       | 1          |
| CPSB intel LNO                                           | Capt        | 0202       | 1          |
| ATO development sr<br>planner                            | LtCol       | 9969       | 1          |
| ATO dev strike planner                                   | Maj         | 7523       | 1          |
| ATO dev intel planner                                    | Capt        | 0202       | 1          |
| ATO dev CAS planner                                      | Capt        | 7509       | 1          |
| C2 plans air defense<br>planner* (1)                     | Capt        | 7210       | 1          |
| BCD (plans) MEF ops<br>LNO                               | Maj         | 0302       | 1          |
| BCD (plans) MEF intel<br>LNO                             | Capt        | 0202       | 1          |

**Table A-5. JCTB and JFACC Liaisons  
and Augments (Continued).**

| <b>Position Description</b>                   | <b>Rank</b> | <b>MOS</b> | <b>No.</b> |
|-----------------------------------------------|-------------|------------|------------|
| AWACS USMC LNO<br>(ACE)                       | LtCol       | 9969       | 3          |
| AWACS USMC LNO* (3)                           | Capt        | 7210       | 3          |
| ABCCC USMC LNO                                | Maj         | 9969       | 3          |
| ABCCC USMC LNO* (3)                           | Capt        | 7208       | 3          |
| <b>Liaison Total = 49 Officers/1 Enlisted</b> |             |            |            |

## **Appendix B**

### **Augments and Liaison Personnel**

Effective liaison among forces is essential for coordinating MAGTF air operations and is a key factor in its success. The ACE commander will provide liaison elements to assist and coordinate planning and execution of air operations. ACE liaison personnel represent the ACE commander at senior headquarters. They are responsible to the ACE G-3, and they serve to expedite the exchange of information between the TACC and senior headquarters. They represent the ACE's capabilities and limitations at levels of command where the ACE commander must continually be involved but is seldom able to visit. Depending on the situation, transportation, and electronic connectivity availability, the liaison personnel will be located at senior or adjacent headquarters or will travel between these headquarters and the TACC.

The two non-MAGTF organizations that most directly affect the employment of ACE assets in a joint or multinational force are the joint targeting coordination board (JTCCB) and the joint force air component commander's (JFACC) joint air operations center (JAOC).

#### **JOINT TARGETING COORDINATION BOARD**

A joint force commander (JFC) may establish and task a JTF-level organization within the command to accomplish broad targeting oversight functions. This organization is usually called a joint targeting coordination board. The JTCCB functions as the review and integration center for JTF targeting efforts. It is a joint activity

composed of representatives from the JTF staff, the components and, if required, their subordinate units.

### **JOINT FORCE AIR COMPONENT COMMANDER**

The JFC will normally designate a joint force air component commander. His primary purpose is to coordinate the use of air power for the benefit of the joint force in support of the JFC objectives. The JFACC is the Service component commander who has the preponderance of air assets to be used and the command, control, and communication ability to assume that responsibility. The JFACC's responsibilities include: planning, coordinating, allocating, and tasking of joint air operations based on the JFC's concept of operations and air apportionment decision.

The JFACC's operations center will be designated a joint air operations center. The JFACC's JAOC is structured to operate as a fully integrated facility and staffed to fulfill all of the JFACC's responsibilities.

### **Joint Air Operations Center**

The mission of the JAOC (see fig. B-1) is to synchronize air operations with air, land, or sea operations through centralized planning, direction, and coordination, and the exchange of operational and intelligence data with all components and agencies of the joint force. The JFACC may also be the designated airspace control authority and/or the area air defense coordinator. If so, the JFACC will also develop the ACP, ACO, and ADP.

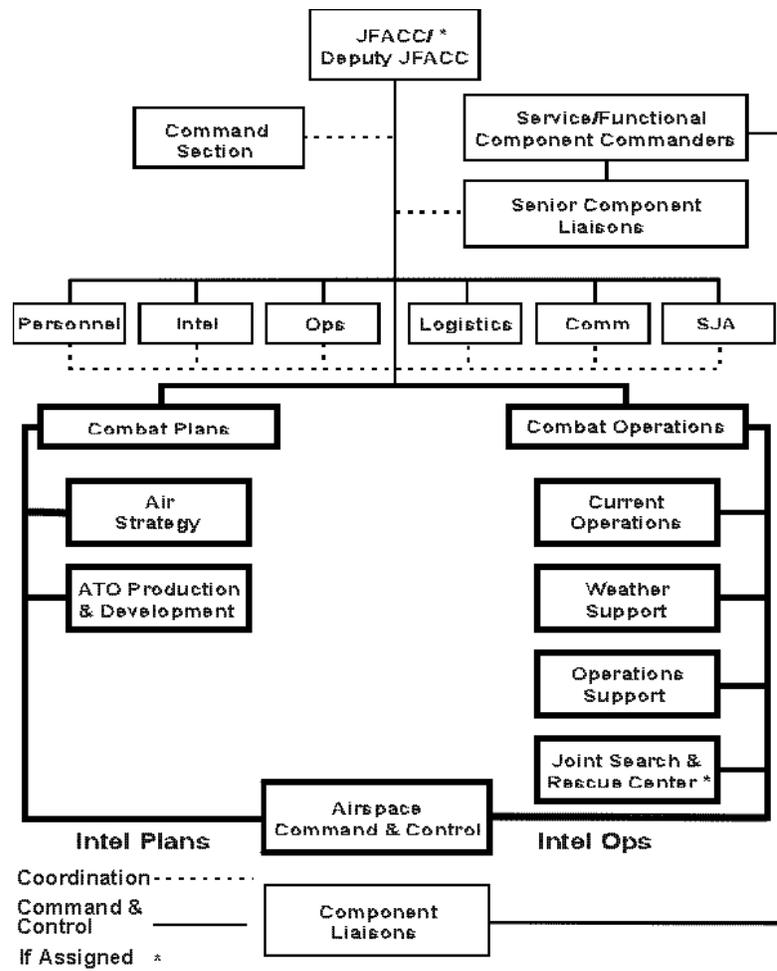


Figure B-1. Joint Air Operations Center.

JFACC organizations may differ based on the theater of operation. The three organizations that should be common to all JAOCs are combat plans, combat operations, and combat intelligence.

The combat plans division produces the ATO, ACP, ACO, and ADP. It is comprised of the following branches:

- 1 Air strategy—develops and plans the strategic direction for joint air operations.
- 1 ATO production and development—produces a timely and executable joint ATO.
- 1 Airspace command and control—develops, coordinates, and publishes plans, concepts of operations, and detailed procedures for the combined interoperability and integration of command and control systems.

The combat operations division manages the execution of the ATO, corrects any problems that may occur, and reacts to changes in guidance or the status of friendly and enemy forces. Combat operations consist of a cadre of fighter, reconnaissance, surveillance, combat support, tanker, bomber, and airlift personnel experienced in battle management. It is normally comprised of the following branches:

- 1 Weather support—provides forecasts tailored for the various requirements, reports significant weather, and inputs weather data in CTAPS, if required.
- 1 Operations support—tracks the flow of assets and status of missions dedicated to each operation (may include airlift, air refueling, reconnaissance, and medical evacuation missions).
- 1 Joint search and rescue center—disseminates the JFC's combat search and rescue (CSAR) concept of operations to all components and establishes C4I and reporting procedures for component search and rescue center operating centers, coordinates

component CSAR plans to resolve actual or projected shortfalls in assets and capabilities, and monitors all CSAR incidents and missions.

The combat intelligence division provides for all intelligence activities in the JAOC. It is comprised of the following branches:

- | Intelligence plans—supports the planning and development of the joint ATO.
- | Intelligence operations—supports the execution of the joint ATO.

## **JFACC LIAISON ELEMENTS**

### **Battlefield Coordination Detachment**

The battlefield coordination detachment (BCD) is provided by the Army component commander to act as the interface between the ground component commander and the JFACC for processing land force requests for air support, monitoring and interpreting the land battle situation for the JAOC, and providing the necessary interface for the exchange of current operational and intelligence data.

### **Special Operations Liaison Element**

The special operations liaison element (SOLE) is provided by the joint force special operations component commander (JFSOCC) to coordinate and synchronize special operation (SOF) air and surface operations with joint air operations.

### **Naval and Amphibious Liaison Element**

The naval and amphibious liaison element (NALE) is provided by the naval component commander, to act as the interface for matters pertaining to Navy and Marine Corps amphibious operations.

### **Marine Liaison Element**

Although not doctrinal, some theater JFACC's include a Marine liaison element (MLE).

### **Air Mobility Element**

The air mobility element (AME) provides detailed planning and coordination for all strategic airlift operations in theater.

### **Strategic Liaison Team**

The strategic liaison team is provided by U.S. Strategic Command to assist the JFC and the JFACC in nuclear planning and coordination.

### **Air Force Liaison Team**

The Air Force liaison team is provided by the Commander, Air Forces, to act as the interface with the JFACC for coordinating and synchronizing Air Force units in support of joint air operations.

## JTCB MARINE BILLET DESCRIPTIONS

### Component Representative

The component representative is the Marine who represents the Marine Corps forces (MARFOR) on the JTCB. The MARFOR representative will receive the MARFOR target nominations and represent them at the JTCB. The MARFOR representative will be provided by the COMMARFOR.

### Component Representative Staff

The MARFOR component representative will have a small staff (3-4 Marines) who will ensure the requisite communications connectivity is maintained with the MARFOR/MAGTF, and that the MARFOR/MAGTF target list is formatted and entered into the theater standard medium for review.

## JAOC MARINE BILLET DESCRIPTIONS

### Senior Marine

The senior Marine is the senior ACE representative in the JAOC. The senior Marine will—

- 1 Maintain liaison with the JFACC and his staff for effective presentation and adjudication of MARFOR aviation and targeting issues that are controlled or affected by the JFACC.
- 1 Be directly responsible to the ACE commander.
- 1 Be the focal point for all information passed from the TACC's current ops, future ops, and future plans officers.

- | Oversee and coordinate the efforts of Marine liaisons and augments assigned to the JAOC.

### **Assistant Combat Operations Officer (Combat Operations Division)**

The assistant combat operations officer is an ACE augment that assists the JAOC combat operations officer as directed. The assistant combat operations officer will—

- | Execute the ATO.
- | Approve ATO changes.
- | Keep the ACE battlestaff informed of the JFC/JFACC's latest objectives, priorities, and rules of engagement.

### **Fighter Duty Officer (Combat Operations Division)**

The fighter duty officer is an ACE augment to the JAOC combat operations division and works for the chief, combat operations division. The fighter duty officer will—

- | Monitor, track, and task (pre-launch through the ACE TACC current ops, post-launch through the applicable air control agency) all MAGTF aviation sorties designated as joint.
- | Pass any changes in tasking or requests for additional ACE fighter sorties to the ACE TACC current ops.
- | Receive requests from the ACE TACC current ops for additional joint sorties and coordinate feedback results of request.

- | Receive a copy of MAGTF/ACE aviation decision support products from the ACE TACC current ops to assist in monitoring the MAGTF plan.
- | Maintain liaison with the TACC's future ops for necessary adjustments in subsequent ATOs.

**JSRC Liaison (Combat Operations Division)**

The JSRC liaison is the MARFOR representative who maintains connectivity with the TACC's current ops search and rescue coordination cell. The JSRC liaison will—

- | Maintain awareness of MAGTF-designated TRAP sorties planned in the ATO.
- | Be the principal advisor to the JSRC director on MAGTF TRAP philosophies and concept, employment, and platform capabilities and limitations.
- | Receive the search and rescue incident report (SARIR) messages from the TACC's current ops search and rescue coordination cell.
- | Monitor the TRAP execution checklist.
- | Ensure the required TRAP special instructions (e.g., execution checklist, communications plan, etc.) are included in the joint ATO.

### **Electronic Combat Representative (Combat Operations Division)**

The electronic combat representative is an ACE augment who works in the JAOC combat operations division for the electronic combat duty officer. The electronic combat duty officer will—

- | Coordinate, through the TACC's current ops, all joint USMC EA-6B sorties.
- | Receive immediate requests for electronic combat aircraft support from the TACC's current ops.
- | Coordinate with the ACE electronic combat representative in the JAOC combat plans division and the ACE TACC future ops for all coordination issues on future tasking and requirements based on taskings that cannot be met on the executing ATO.
- | Assist in integrating the electronic combat and air defense system suppression assets in support of mission objectives.
- | Monitor execution of the current ATO to optimize ACE electronic combat support to the battle situation.
- | Coordinate with intelligence analysts on current order of battle data and nominate immediate enemy C3 targets.
- | Assist in receiving and processing immediate electronic combat requests from USAF, joint, or combined forces and coordinate with the Army BCD and joint service liaison officers for support requests.
- | Coordinate with the JAOC airspace control section for airspace management of electronic combat assets.
- | Coordinate with the communications-electronics duty officer, the BCD, and the director of electronic combat for frequency deconfliction.

- | Coordinate major electronic combat and deception plans and operations with the JAOC combat plans division and with the tactical deception officer.
- | Recommend electronic combat initiatives to the JAOC combat plans division for other MAGTF requirements.
- | Pass all joint electronic combat (EC) information to the TACC's current ops.

### **Airspace Representative (Combat Operations Division)**

The airspace representative is an ACE augment to the JAOC combat operations division and works for the airspace control duty supervisor. The airspace representative will—

- | Be the conduit for the receipt of airspace control measure requests (ACMREQ) from the TACC's current ops airspace cell.
- | Monitor and provide feedback to the TACC's current ops airspace cell on any joint airspace issues that will affect ACE aircraft or air defense assets.
- | Maintain access to the current MAGTF ACO and any SPINS updates to ensure that MAGTF requirements are met.
- | Maintain liaison with the ACE augment to combat plans division/airspace plans to make necessary adjustments in subsequent ATO's.
- | Coordinate with the JAOC frequency manager for frequency deconfliction.
- | Post and update the JAOC airspace section maps with ACE airspace control measures (ACMs).

- | Monitor the ATO and ensure that joint sorties that support MAGTF forces are updated with MAGTF air control and airspace procedures through the fighter duty officer.
- | Maintain liaison with ACE representatives in the JSRC, tanker branch, air defense section, and electronic warfare sections to ensure all assets are serviced with the applicable airspace requirement.

### **Air Defense Representative (Combat Operations Division)**

The air defense representative is an ACE augment to the JAOC combat operations division and works for the senior air defense officer (SADO). The air defense representative will—

- | Maintain situational awareness of ACE air defense assets in theater to include—
  - n ACE air defense agency architecture.
  - n Agencies and systems location.
  - n Sector coverage.
  - n Weapons conditions.
  - n Alert status.
- | Advise the SADO of ACE air defense system or platform employment philosophy, capabilities, and limitations.
- | Coordinate any changes in the ADP with the applicable airspace representatives.
- | Be the conduit for any requests for change of assets or procedures in support of the MAGTF zone.

- | Assist in requesting immediate (ground/aircraft) air defense assets to meet MAGTF requirements.

### **MAGTF BCD LNO**

The MAGTF BCD LNO is the senior MAGTF ground liaison to the BCD and reports to the senior Marine. The MAGTF BCD LNO will—

- | Maintain connectivity with the senior MAGTF fires section.
- | Have copies of any decision support products produced by the MAGTF.
- | Ensure fire support coordination measures (FSCMs) are coordinated, when requested, and when approved or implemented.
- | Pass any changes of higher, adjacent, and/or supporting unit priorities to the MAGTF current ops.

### **MAGTF BCD Intelligence LNO**

The MAGTF BCD Intelligence (Intel) LNO is the senior MAGTF intelligence representative in the JAOC and reports to the senior Marine. The MAGTF BCD Intel LNO will maintain connectivity with the MAGTF G-2 and be the conduit for all intelligence information received from, or disseminated to, the MAGTF G-2.

### **Senior Marine Planner (Combat Plans Division)**

The senior Marine planner is an ACE augment to the JAOC combat plans division and works for the director, combat plans. The senior Marine planner will—

- | Maintain liaison with the JAOC senior Marine.

- | Coordinate the activities of MAGTF liaisons to the combat plans division.
- | Maintain connectivity with the TACC's future ops ATO development section.
- | Receive all decision support products from the ACE.
- | Be prepared to input the direct support ATO if the TACC's ATO planning medium or software capability is degraded.
- | Extract and provide to the joint aviation planning process the sorties and time on target (TOT) of excess or directed MAGTF sorties.

### **Marine Aviation Planners (Combat Plans Division)**

Marine aviation planners are provided by the ACE to support the joint ATO development process in the JAOC. Marine aviation planners will—

- | Work for the senior Marine planner.
- | Maintain connectivity with the TACC's future ops ATO development section for the receipt of all MAGTF ACE decision support products (e.g., MAAP, SPINS, etc.).
- | Ensure MAGTF excess or directed sorties are entered into the theater ATO planning medium.
- | Represent MAGTF aircraft platform capabilities, availability (in accordance with ACE flow plan), and integration into the joint aviation planning process (strike, CAS).
- | Be prepared to enter the MAGTF direct support ATO into the joint planning medium if the TACC's ATO production effort fails or is degraded.

### **Clerk (Combat Plans Division)**

The combat plans clerk assists, as directed, the senior Marine planner in the JAOC combat plans division. The combat plans clerk will have a solid knowledge of the existing theater ATO planning medium or software.

### **Strategy Officer (Combat Plans Division)**

The strategy officer is a MAGTF LNO, typically provided to the strategy board (implementation cell) at the JFACC. The strategy officer will—

- | Assist in developing and refining the theater air strategy with MAGTF emphasis.
- | Assist in developing and refining air objectives, prioritized tasks, and measures of effectiveness for each phase of the campaign.
- | Keep the strategy board apprised of MAGTF aviation beddown, force posturing, and force projection.
- | Be the conduit for MAGTF information warfare requirements, including: electronic combat, psychological operations, SOF, and tactical deception.

### **Marine Strategy Officer (Combat Plans Division)**

The Marine strategy officer is an ACE liaison who reports to the senior Marine and works in the JAOC combat plans division (ATO production and development branch). The Marine strategy officer will—

- | Assist in developing the JFACC daily guidance by providing MAGTF input.

- | Review and assist in the JFACC apportionment recommendation.
- | Receive the approved MAGTF apportionment recommendation from the TACC's future ops officer.
- | Assist in preparing the joint prioritized integrated target list (JPITL).
- | Receive and brief the ACE combat assessment from previous ATOs.
- | Ensure seamless integration of the MAGTF information warfare plan into the joint targeting effort.

### **Marine Air Defense Planner (Combat Plans Division)**

The air defense planner is an ACE liaison to the JAOC combat plans division (air defense branch). The air defense planner will—

- | Be familiar with the MAGTF air defense asset laydown and concept of employment.
- | Assist in developing, coordinating, and promulgating theater air defense plans and rules of engagement with emphasis on the MAGTF zone of action.
- | Maintain connectivity with the air defense planners in the TACC's future ops ATO planning cell.
- | Receive from, and promulgate to the TACC, information on all air defense issues including: the TACOPDAT, OPTASK LINK, air defense sectors, communication plan, CAP station management, etc.

### **Marine Airspace Management Planner (Combat Plans Division)**

The airspace management planner is an ACE liaison to the JAOC combat plans division (airspace management branch). The airspace management planner will—

- 1 Be familiar with the ACE laydown, concept of operations, and requirements as received from the airspace planner in the TACC's future ops ATO planning cell.
- 1 Coordinate the MAGTF airspace requirements for inclusion into the ACO and update with the SPINS.
- 1 Be knowledgeable of the current automated airspace deconfliction/planning medium or software.
- 1 Assist in planning and inclusion of all ACE inputs to the SPINS (e.g., communication plan, TRAP execution checklist, control agency check-in sequence).

### **AWACS Senior Marine LNO (Aviation Command Element)**

The senior USMC liaison aboard the AWACS represents the ACE commander with the JFACC aviation command element. He provides expertise on USMC aviation tactical employment. The AWACS senior Marine LNO will—

- 1 Maintain electronic connectivity with the TACC's current ops senior watch officer.
- 1 Have copies of the ACE decision support products.
- 1 Be prepared to direct ACE direct support aviation activities with JFACC air command element assistance if the MACCS is significantly degraded or requires localized assistance.

### **AWACS Marine LNO (Aviation Command Element)**

The Marine LNO aboard the AWACS is an ACE air defense representative to the JFACC airborne command element. He assists in air defense taskings or direction if the TAOC becomes a casualty, and MARFOR air defense assets (ground and air based) require control.

### **Senior Marine LNO (Airborne Battlefield Command Control Center)**

The senior Marine liaison aboard the airborne battlefield command control center (ABCCC) is the direct representative of the ACE commander aboard the ABCCC. The senior Marine LNO will—

- | Maintain electronic connectivity with the TACC's current ops deep battle cells.
- | Have copies of the MAGTF decision support products.
- | Be capable of providing direction to air interdiction sorties if the TACC or TAOC becomes a casualty or is degraded.
- | Be a virtual or physical extension of the TACC's current ops deep battle coordinator, if required.

### **Marine LNO (Airborne Battlefield Command Control Center)**

The Marine LNO aboard the ABCCC represents the ACE commander on airspace issues. The Marine LNO will—

- | Ensure ACM's are current and updated to support ACE requirements.
- | Maintain electronic connectivity with the TACC's current ops airspace cell.

- | Be a virtual or physical extension of the TACC's current ops air-space cell if the TACC or TAOC becomes a casualty.
- | Assist in passing information between air agencies as requested or directed.

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## Appendix C

### TACC Communications Nets

Voice and data circuits employed by the TACC are presented in this appendix. The ACE G-3 may choose to combine nets based on operational requirements or asset limitations. Nets can be combined whenever original net functions can still be accomplished and the net is not overloaded.

#### TACC VOICE NETS

**MAGTF Tactical Net 1 (VHF/UHF-SATCOM/HF)**—provides the primary path for operational traffic between the commander, landing force, and the major combat elements of the MAGTF.

**MAGTF Tactical Net 2 (HF/UHF-SATCOM)**—same as the MAGTF tactical net 1; established when warranted by volume of traffic.

**MAGTF Tactical Air Command Net (UHF-SATCOM/HF)**—provides the means by which the MAGTF commander and the ACE commander coordinate air tasking and air apportionment decisions and task and supervise the execution of the six functions of Marine aviation.

**MAGTF Command Net 1 (HF/UHF-SATCOM)**—provides a means for the MAGTF commander to exercise command and coordinate administrative and logistic functions with the major components of the MAGTF.

**MAGTF Command Net 2 (HF/UHF-SATCOM)**—same as MAGTF command net 1; established when warranted by volume of traffic.

**MAGTF Alert/Broadcast Net (UHF-SATCOM/HF)**—provides a means for rapidly passing alert warning information of any character. It may be used for transmitting all types of traffic.

**MAGTF Intelligence Net (HF/UHF-SATCOM/VHF)**—provides a path for rapid collection and dissemination of intelligence between the commander, landing force, and the major combat elements of the MAGTF.

**MAGTF Communications Coordination Net (UHF/SATCOM/HF)**—provides higher headquarters a means for coordinating, installing, and restoring communications circuits with major subordinate commands within the area of operations.

**ACE Tactical Air Command Net 1 (HF/UHF-SATCOM)**—provides the primary means by which the tactical air commander tasks subordinate elements to perform the six functions of Marine aviation.

**ACE Command Net 1 (HF)**—provides a means for the ACE commander to exercise command and coordinate administrative and logistic functions with subordinate units.

**ACE Command Net 2 (HF)**—activated when ACE command net 1 is overloaded with traffic.

**ACE Alert/Broadcast Net (UHF-SATCOM/HF)**—provides a means for rapidly passing alert warning information of any character.

**ACE Intelligence Net (HF/VHF)**—provides a means for rapidly collecting and disseminating intelligence information.

**ACE Communications Coordination Net (UHF-SATCOM/HF)**—provides a means for coordinating, installing, and restoring communications circuits.

**Deep Battle Air Control Net (UHF)**—provides the deep battle cell a means to direct aircraft in the conduct of deep air support missions. This is a UHF net with an airborne radio relay to extend line-of-sight capability.

**Direct Air Support Net (HF/MUX)**—provides a means for the DASC to request direct air support aircraft from the TACC. Information pertaining to aircraft stationing, fuel and ordnance status, progress of direct air support missions, etc., may be passed over this net.

**Tactical Air Request/Helicopter Request Net (HF/VHF)**—provides a means for forward ground combat units to request immediate air support from the DASC. Intermediate ground combat echelons monitor this net and may modify, disapprove, or approve a specific request. The DASC uses the net to brief the requesting unit on the details of the mission. Target damage assessments and emergency helicopter requests may be passed over this net. Multiple TAR/HR nets may be required, depending on the scope of close air support operations.

**Tactical Air Traffic Control Net (UHF/VHF)**—provides a means for the TACC/TADC, TAOC, and DASC to exercise control of all tactical and itinerant aircraft in the area of responsibility. Information passed over this net include aircraft reports of launches by mission number, aircraft clearances to their assigned control agencies, aircraft diversions as necessary, and aircraft completed mission reports prior to landing. Multiple tactical air traffic control (TATC) nets are required, with the TACC/TADC, TAOC, and DASC each having its own net.

**Tactical Air Direction Net (UHF/VHF)**—provides a means for the direction of aircraft in the conduct of offensive air support missions and for the DASC to brief support aircraft on target information or assignment to a terminal controller. Multiple tactical air direction (TAD) nets are required and are assigned to major air control agencies.

**Air Operations Control Net (HF)**—provides a means for the TAOC to request interceptor aircraft and to report friendly air defense situation information to the TACC/TADC. Information pertaining to combat air patrol availability, stationing, and assignment; assignment and disposition of targets; intercept progress; SAM unit status; and employment and aircraft or missile weapons coordination is passed on this net. Multiple AOC nets are normally required with one or more nets being established for each TAOC in operation.

**Command Action Net (MUX/HF/VHF)**—provides a means for command-level coordination of antiair warfare through the exchange of information pertaining to missile battery employment, assignment of air targets, and interceptor or missile coordination. Net functions may be performed over the air operations control net when multichannel radio circuits are not established.

**Combat Identification or Direction Net (HF/MUX)**—provides a means for reporting an unidentified or hostile aircraft, including initial contact reports, tracking, amplifying, and final disposition reports. Multiple combat identification or detection nets may be employed and are assigned to appropriate radar surveillance activities, as required.

**Search and Rescue Net (UHF/HF)**—provides a means for the control and coordination of air rescue missions. Multiple SAR nets may be required, depending on the number of current SAR missions.

**Voice Product Net (MUX/HF/UHF)**—provides a means to forward non-digital signals intelligence information to other interfacing units.

**Guard Net (UHF/VHF)**—provides an emergency distress net used by aircraft to declare an emergency. It further serves as a means for air control agencies to advise aircraft of emergency conditions or serious hazards to aircraft safety.

**Data Link Coordination Net (MUX/HF/UHF)**—provides a means for maintenance coordination of data link operation. May be combined with the track supervision net for single-channel operations. Generally, there is one such net per TADIL B circuit.

**Track Supervision Net (MUX/HF/UHF)**—provides a means for track surveillance personnel to exchange voice information to maintain a clear air picture. This net may assume the function of the data link coordination net based on equipment and channel availability.

**Interface Coordination Net (HF/UHF/VHF/MUX)**—provides a means for command-level coordination of joint data link employment.

## DATA LINKS

**Tactical Digital Information Link (TADIL) A (HF/UHF)**—provides a means for exchanging automatically processed digital data between various tactical data systems. Types of data passed include

air and surface tracks, weapons status, and selected orders and functions. TADIL A operates as a star-netted data link (also known as Link-11).

**TADIL B (MUX/Landline)**—provides a functional equivalent to TADIL A, but is operated in a point-to-point mode using a full-duplex wire or multi-channel path.

**NATO Link-1 (MUX)**—provides interface to NATO air defense ground environment (NADGE) agencies in a point-to-point mode using full-duplex data link.

## TACTICAL INTELLIGENCE BROADCASTS

**Tactical Information Broadcast Service**—provides a capability to disseminate correlated, time-sensitive tactical information to joint operational users via UHF broadcasts from aircraft or fleet satellite communications system (FLTSATCOM). Current sources of data can include RC-135 Rivet Joint, JSTARS, AWACS, SENIOR TROUPE, SENIOR SCOUT, etc.

**Tactical Related Applications**—provides a capability to collect information from multiple sources and disseminate it through a UHF SATCOM broadcast to tactical users. TRAP provides global surveillance information for sensor cueing and integration into data bases at the various field receive locations. Data is forwarded from sensor to processor to communications gateways or relays to one of the FLTSATCOM broadcast satellites for worldwide dissemination to military users.

**Tactical Data Information Exchange System B**—provides a capability to process and distribute nationally generated tactical

data to operational forces in support of indications and warning, sensor cueing, and user mission planning.

### **COMMUNICATIONS GUARD CHARTS AND TERMINAL EQUIPMENT LOCATIONS**

Tables C-1 through C-6 are recommended ACE communications guard charts with suggested terminal equipment locations. The actual assignment of communications nets and terminal equipment locations will vary based on the ACE commander's METT-T analysis.

The following legend applies to tables C-1 through C-6:

- C = Net Control Station
- R = As Required
- M = Monitor
- X = Guard
- T = Terminal Equipment Locations

**Table C-1. Communications Guard Chart (Part I).**

| Voice Nets    | Agencies |          |      |      |      |          |      |
|---------------|----------|----------|------|------|------|----------|------|
|               | MEF HHQ  | TACC     | TAOC | EW/C | MAGs | ATC Dets | DASC |
| MAGTF TAC 1   | C        | X        |      |      |      |          |      |
| MAGTF TAC 2   | RC       | RX       |      |      |      |          |      |
| TAC AIR CMD 1 | C        | X        | RX   | R    | RX   | RX       | RX   |
| MAGTF CMD 1   | RC       | X        |      |      |      |          |      |
| MAGTF CMD 2   | C        | RX       |      |      |      |          |      |
| MAGTF Alert   | C        | X        |      |      |      |          |      |
| MAGTF Intel   | C        | X        |      |      |      |          |      |
| MAGTF C/C     | C        | C (MWCS) |      |      |      |          |      |
| ACE TAC 1     |          | C        | X    | X    | X    | X        |      |
| ACE TAC 2     |          | RC       | RX   | RX   | RX   | RX       |      |

**Table C-2. Terminal Equipment Locations (Part I).**

| Voice Nets    | Agencies |     |                      |                   |                     |               |                   |
|---------------|----------|-----|----------------------|-------------------|---------------------|---------------|-------------------|
|               | SWO      | SAC | Ground Watch Section | ACE Watch Section | Intel Watch Section | Radio Central | ACI Intel Officer |
| MAGTF TAC 1   | T        |     | T                    |                   |                     | T             |                   |
| MAGTF TAC 2   | RT       |     | RT                   |                   |                     | T             |                   |
| TAC AIR CMD 1 | T        |     |                      |                   |                     | T             |                   |
| MAGTF CMD 1   |          |     |                      | T                 |                     | T             |                   |
| MAGTF CMD 2   |          |     |                      | RT                |                     | RT            |                   |
| MAGTF Alert   |          | T   |                      | T                 | T                   |               | T                 |
| MAGTF Intel   |          |     |                      |                   | T                   |               | T                 |
| MAGTF C/C     |          |     |                      |                   |                     | T             |                   |
| ACE TAC 1     |          | T   |                      |                   |                     | T             |                   |
| ACE TAC 2     |          | RT  |                      |                   |                     | RT            |                   |

*Note: The current ops officer, air defense cell, airspace control cell, close battle cell, deep battle cell, SAR cell, track data coordination cell, and the interface control cell do not have terminal equipment locations for any of the voice nets.*

**Table C-3. Communications Guard Chart (Part II).**

| Voice Nets | Agencies |      |      |      |      |          |      |
|------------|----------|------|------|------|------|----------|------|
|            | MEF HHQ  | TACC | TAOC | EW/C | MAGs | ATC Dets | DASC |
| ACE CMD1   |          | C    | R    | R    | X    | R        | R    |
| ACE CMD 2  |          | RC   | R    | R    | RX   | R        | R    |
| ACE Alert  |          | C    | X    | RX   | X    | X        | X    |
| ACE Intel  |          | C    | X    | R    | X    | R        | X    |
| ACE C/C    |          | C    | X    | X    |      | X        | R    |
| DBAC       |          | C    | R    |      |      |          | R    |
| DAS        |          | C    |      |      |      |          | X    |
| TAR/HR     |          | R    |      |      |      |          | C    |
| TATC 1-12  |          | CR   | CR   | CR   |      | CR       | CR   |
| TAD        |          |      |      |      |      |          | C    |

**Table C-4. Terminal Equipment Locations (Part II).**

| Voice Nets | Agencies |               |                 |              |                  |                   |                  |     |               |         |
|------------|----------|---------------|-----------------|--------------|------------------|-------------------|------------------|-----|---------------|---------|
|            | SAC      | ACE Watch Set | Intel Watch Set | Air Def Cell | A/S Central Cell | Close Battle Cell | Deep Battle Cell | ICO | Radio Central | ACI Off |
| ACE CMD 1  |          | T             |                 |              |                  |                   |                  |     | T             |         |
| ACE CMD 2  |          | RT            |                 |              |                  |                   |                  |     | RT            |         |
| ACE Alert  | T        |               |                 |              |                  |                   |                  |     | T             | T       |
| ACE Intel  |          |               | T               |              |                  |                   |                  |     |               | T       |
| ACE C/C    |          |               |                 |              |                  |                   |                  | T   |               |         |
| DBAC       |          |               |                 |              |                  |                   | T                |     |               |         |
| DAS        |          |               |                 |              | T                | T                 |                  |     |               |         |
| TAR/HR     |          |               |                 |              |                  | RT                |                  |     | T             |         |
| TATC       |          |               |                 | T            |                  |                   |                  |     |               |         |
| TAD        |          |               |                 |              |                  |                   |                  |     |               |         |

*Note: The current ops officer, SWO, ground watch section, SAR cell, and the track data coordinator cell do not have terminal equipment locations for any of the voice nets.*

**Table C-5. Communications Guard Chart (Part III).**

| Voice Nets | Agencies |      |      |      |      |          |      |
|------------|----------|------|------|------|------|----------|------|
|            | MEF HHQ  | TACC | TAOC | EW/C | MAGs | ATC Dets | DASC |
| AOC 1-4    |          | C    | X    | R    |      |          |      |
| CA         |          | C    | X    | X    |      |          |      |
| CI/D       |          | R    | C    | X    |      | X        | R    |
| SAR        |          | C    | X    | X    | X    | X        | X    |
| VPN        |          | C    | R    | R    |      |          |      |
| Guard      |          | C    | X    | X    | X    | X        | X    |
| DCN        |          | C    | X    | X    |      | X        |      |
| TSN        |          | C    | X    | X    |      | X        |      |
| ICN        |          | C    | X    |      |      |          |      |

**Table C-6. Terminal Equipment Locations (Part III).**

| Voice Nets | Agencies |     |                     |              |                |     |     |               |         |
|------------|----------|-----|---------------------|--------------|----------------|-----|-----|---------------|---------|
|            | SWO      | SAC | Intel Watch Section | Air Def Cell | SAR Coord Cell | TDC | ICO | Radio Central | ACI Off |
| AOC        |          |     |                     | T            |                |     |     | T             |         |
| CA         | T        | T   |                     |              |                |     |     |               |         |
| CI/D       |          |     |                     | T            |                |     |     | T             |         |
| SAR        |          |     |                     |              | T              |     |     | T             |         |
| VPN        |          |     | T                   |              |                |     | T   | T             | T       |
| Guard      |          |     |                     | T            | T              |     |     | T             |         |
| DCN        |          |     |                     |              |                | T   | T   | T             |         |
| TSN        |          |     |                     |              |                | T   |     | T             |         |
| ICN        |          |     |                     | T            |                |     |     | T             |         |

*Note: The current ops officer, ground watch section, ACE watch section, airspace control cell, close battle cell, and the deep battle cell do not have terminal equipment locations for any of the voice nets.*

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## Appendix D

### Glossary

#### Section I Acronyms and Abbreviations

|           |       |                                                 |
|-----------|-------|-------------------------------------------------|
| AADC      | ..... | area air defense commander                      |
| AAW       | ..... | antiair warfare                                 |
| ABCCC     | ..... | airborne battlefield command and control center |
| ABP       | ..... | air battle plan                                 |
| ACA       | ..... | airspace control authority                      |
| ACE       | ..... | aviation combat element                         |
| ACI       | ..... | air combat intelligence                         |
| ACM       | ..... | airspace control measure                        |
| ACMREQ    | ..... | airspace control measure request                |
| ACO       | ..... | airspace control order                          |
| ACP       | ..... | airspace control plan                           |
| ADLE      | ..... | ancillary data link equipment                   |
| ADP       | ..... | air defense plan                                |
| AFATDS    | ..... | advanced field artillery tactical data system   |
| AFC       | ..... | all-source fusion center                        |
| AGOS      | ..... | air-ground operations system                    |
| AI        | ..... | air interdiction                                |
| AIRSUPREQ | ..... | air support request                             |
| ALD       | ..... | aviation logistics division                     |
| ALLOREQ   | ..... | allocation request                              |
| AOC       | ..... | air operations center                           |
| ASE       | ..... | aircraft survivability equipment                |
| ASF       | ..... | Army standard family                            |
| ASR       | ..... | assault support request                         |

ATO.....air tasking order  
ATRIMS.....Aviation Training and Readiness Information System  
AWACS..... airborne warning and control system  
AWC ..... assistant wing commander  
BDA ..... battle damage assessment  
C2W ..... command and control warfare  
C3D..... command, control, and communications distribution  
C4ISR .....command, control, communications, computers,  
intelligence, surveillance, and reconnaissance  
CAFMS..... computer-assisted force management system  
CAP.....combat air patrol  
CAS..... close air support  
CCIR..... commander's critical information requirements  
CIS ..... coordinated intelligence system  
COA ..... course of action  
COC .....combat operations center  
COC/TC.....CTAPS Operator/Technician Course  
COMINT.....communications intelligence  
COMSEC.....communications security  
C/S .....chief of staff  
CSAR..... combat search and rescue  
CSSE..... combat service support element  
CTAPS .....contingency theater automated planning system  
CTT..... commander's tactical terminal  
CTT3.....commander's tactical terminal three-channel  
DAS ..... deep air support  
DASC.....direct air support center  
EC ..... electronic combat  
EIU..... ethernet interface unit  
ELINT..... electronic intelligence  
EMI..... electromagnetic interface  
EOTDA..... electro-optical tactical decision aids  
EVAC..... evacuation system  
FARP..... forward arming and refueling point

|          |                                                         |
|----------|---------------------------------------------------------|
| FFCC     | force fires coordination center                         |
| FOB      | forward operating base                                  |
| FRAGO    | fragmentary order                                       |
| FRAS     | fuel resources analysis sytem                           |
| FSCC     | fire support coordination center                        |
| FSCL     | fire support coordination line                          |
| FSCM     | fire support coordinating measures                      |
| FSSG     | force service support group                             |
| GCCS     | Global Command and Control System                       |
| GCE      | ground combat element                                   |
| GRIS     | Global Reconnaissance Information System                |
| GSORTS   | Global Status of Resources and Training System          |
| HF       | high frequency                                          |
| HMDDASC  | high-mobility downsized direct air support center       |
| HMMWV    | high mobility multipurpose wheeled vehicle              |
| HUMINT   | human intelligence                                      |
| HVAA     | high value airborne asset                               |
| I&W      | indications and warning                                 |
| IAS      | intelligence analysis system                            |
| ICM      | intelligence correlation module                         |
| IMINT    | imagery intelligence                                    |
| INTELINK | intelligence link                                       |
| INTREP   | intelligence report                                     |
| INTSUM   | intelligence summary                                    |
| IPB      | intelligence preparation of the battlefield/battlespace |
| ISO      | International Standards Organization                    |
| IW       | information warfare                                     |
| JAOC     | joint air operations center                             |
| JAOSC    | joint air operations staff course                       |
| JDISS    | joint deployable intelligence support system            |
| JFACC    | joint force air component commander                     |
| JFC      | joint force commander                                   |
| JFSOCC   | joint force special operations component commander      |
| JIPTL    | joint integrated prioritized target list                |

JOPES ..... Joint Operation Planning and Execution System  
JRCC ..... joint rescue coordination center  
JSRC ..... joint search and rescue center  
JSTE ..... joint system training exercise  
JTAR ..... joint tactical airstrike request  
JTAT ..... joint systems application to training  
JTCB ..... joint targeting coordination board  
JTF ..... joint task force  
LOS ..... line of sight  
MAAP ..... master air attack plan  
MACCS ..... Marine air command and control system  
MACG ..... Marine air control group  
MAG ..... Marine aircraft group  
MAGTF ..... Marine air-ground task force  
MAP ..... master attack plan  
MAPP ..... Marine aviation planning program  
MATCD ..... Marine air traffic control detachment  
MAW ..... Marine aircraft wing  
MC&G ..... mapping, charting, and geodesy  
MCESS ..... Marine Corps expeditionary shelter system  
MCPP ..... Marine Corps Planning Process  
MCWP ..... Marine Corps warfighting publication  
MEF ..... Marine expeditionary force  
MEP ..... mobile electric power  
MERWS ..... modular extendible rigid wall shelters  
MET ..... mission-essential tasks  
METL ..... mission-essential task list  
MEU ..... Marine expeditionary unit  
MISREP ..... mission report  
MISTEX ..... MACCS integrated simulated training exercise  
MLE ..... Marine liaison element  
MOJT ..... managed on-the-job training  
MOPP ..... mission-oriented protective posture  
MOS ..... military occupational specialty

MSC .....major subordinate command  
MSCS ..... multiple source correlation system  
MTACS .....Marine tactical air command squadron  
MUX ..... multichannel radio  
MWSG .....Marine wing support group  
MWSS ..... Marine wing support squadron  
NADGE..... NATO air defense ground environment  
NALE .....naval amphibious liaison element  
NAV..... network access unit  
NBC.....nuclear, biological, and chemical  
OAAW..... offensive anitair warfare  
OBP/DDL..... On-Board Processing/Direct Down Link  
OEG..... operational exposure guide  
OIR.....other inelligence requirments  
OODA .....observe, orient, decide, act  
OPLAN .....operation plan  
OPORD ..... operation order  
OPT .....operational planning team  
OPTASKLINK .....operational task link  
PDE&A ..... planning, decision, execution, and assessment  
PIR.....priority intelligence requirement  
RAAP ..... rapid application of air power  
RAOG .....rear area operations group  
RFI..... request for information  
ROE..... rules of engagement  
RRFI..... response to request for information  
SAC ..... senior air coordinator  
SADO.....senior air defense officer  
SAM .....surface-to-air missile  
SAR ..... search and rescue  
SARIR ..... search and rescue incident report  
SATCOM.....satellite communications  
SCI.....sensitive compartmented information  
SCL .....standard configuration load

|                  |                                                                          |
|------------------|--------------------------------------------------------------------------|
| SCP .....        | secondary control point                                                  |
| SEAD .....       | suppression of enemy air defenses                                        |
| SERE.....        | survival, evasion, resistance, and escape                                |
| SIGINT .....     | signals intelligence                                                     |
| SIPRNET .....    | secret internet protocol router network                                  |
| SOF .....        | special operations forces                                                |
| SOLE .....       | special operations liaison element                                       |
| SORTIEALOT ..... | sortie allotment                                                         |
| SPINS .....      | special instructions                                                     |
| SSO .....        | special security office                                                  |
| SWO .....        | senior watch officer                                                     |
| SYSADMIN .....   | system administrator                                                     |
| SYSCON.....      | systems control                                                          |
| T&R .....        | training and readiness                                                   |
| TAC.....         | tactical air commander                                                   |
| TAC(A) .....     | tactical air coordinator (airborne)                                      |
| TACC.....        | tactical air command center (USMC);<br>tactical air control center (USN) |
| TADC.....        | tactical air direction center                                            |
| TADIL.....       | tactical digital information link                                        |
| TADIX .....      | tactical data information exchange system                                |
| TAOC.....        | tactical air operations center                                           |
| TARGET .....     | theater analysis and replanning<br>graphical execution toolkit           |
| TBMCS.....       | theater battle management core system                                    |
| TCO .....        | tactical combat operations                                               |
| TDDS .....       | tactical data dissemination system                                       |
| TDS.....         | tactical data systems                                                    |
| TERPES .....     | tactical electronic reconnaissance<br>processing and evaluation system   |
| TIBS.....        | tactical information broadcast service                                   |
| TMD .....        | theater missile defense                                                  |
| TNL.....         | target nomination list                                                   |
| TOT.....         | time on target                                                           |

TPFDD ..... time-phased force and deployment data  
TRAP ..... tactical recovery of aircraft and personnel  
TRE ..... tactical receive equipment  
TRIXS ..... tactical reconnaissance intelligence exchange system  
TSCIF ..... tactical sensitive compartmented information facility  
TWM ..... targeting and weaponeering module  
UAV ..... unmanned aerial vehicle  
UCD ..... user control device  
UHF ..... ultrahigh frequency  
VHF ..... very high frequency  
VMAQ ..... Marine tactical electronic warfare squadron  
WCCS ..... wing command and control system  
WMD ..... weapons of mass destruction  
WWMCCS ..... Worldwide Military Command and Control System

## Section II Definitions

**air boss**—The single point of contact at an air facility, responsible to the aviation combat element (ACE) G-3, who coordinates all activities at an air facility and is the primary interface with the tactical air command center. The air boss is responsible for synchronizing the operations of fuel, ordnance, maintenance, and ground support activities to execute the missions tasked in the daily air tasking order (ATO). Additionally, the air boss is responsible for recommending changes to the ATO based on changes in the status of operations at the air facility and adjusting the operations at the air facility to meet changes in the ATO. (Proposed definition for inclusion in MCRP 5-12C, *Marine Corps Supplement to the DOD Dictionary of Military and Associated Terms*)

**air combat intelligence**—That portion of the tactical air command center and aviation combat element commander's battlestaff responsible for the production of aviation specific all-source intelligence and its dissemination throughout the tactical air command center. (Proposed definition to be approved upon publication of this manual.) Also called ACI.

**air control**—The authority to effect the maneuver of aircraft. The elements of air control are: air control agency, air controller, airspace control, operational control, positive control, procedural control, radar control, and terminal control. (MCRP 5-12C) Air control is the authority to direct the physical maneuver of aircraft in flight or to direct an aircraft or surface-to-air weapon (SAW) unit to engage a specific target. (MCWP 3-25)

**air control agency**—An organization possessing the capability to exercise air control. (MCRP 5-12C)

**air direction**—The guidance and supervision which a commander employs to focus his resources on mission accomplishment. Air direction occurs as a sequence of the following activities: apportionment (air), allocation (air), tasking, and fragmentary orders. (MCRP 5-12C) The authority to regulate the employment of air resources (aircraft and surface-to-air [SAW] units) to maintain a balance between their availability and the priorities assigned for their usage. (MCWP 3-25)

**air reconnaissance**—The acquisition of intelligence information by employing visual observation and/or sensors in air vehicles. (Joint Pub 1-02)

**airspace control authority**—The commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area. (Joint Pub 1-02) Also called ACA.

**airspace control order**—An order implementing the airspace control plan that provides the details of the approved requests for airspace control measures. It is published either as part of the air tasking order or as a separate document. (Joint Pub 1-02) Also called ACO.

**airspace control plan**—The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force area of responsibility/joint operations area. (Joint Pub 1-02) Also called ACP.

**airspace management**—The coordination, integration, and regulation of the use of airspace of defined dimensions. (Joint Pub 1-02)

**area of operations**—An operational area defined by the joint force commander for land and naval forces. Areas of operation do not typically encompass the entire operational area of the joint force commander, but should be large enough for component commanders to accomplish their missions and protect their forces. (Joint Pub 1-02) Also called AO.

**area of responsibility**—1. The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations. 2. In naval usage, a pre-defined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation. (Joint Pub 1-02) Also called AOR.

**command and control**—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. (Joint Pub 1-02) Also called C2.

**centralized control**—In air defense, the control mode whereby a higher echelon makes direct target assignments to fire units. (Joint Pub 1-02) In military operations, a mode of battlespace management in which one echelon of command exercises total authority and direction of all aspects of one or more warfighting functions. It is a method of control where detailed orders are issued and total unity of action is the overriding consideration. (MCRP 5-12C)

**combat assessment board**—A board formed within the tactical air command center designed: 1) to provide recommended process improvements in tactics, techniques, procedures, ordnance, countermeasures equipment/expendables, etc.; 2) to share its outputs with all other units in the joint/combined effort through the operational chain of command; and 3) to stimulate government labs, industry, and the procurement process into developing rapid solutions to real/critical problems. The combat assessment board draws input from two sources. It receives an intelligence assessment in the form of battle damage assessment (BDA) inputs, and it receives operational inputs from the flying units describing munitions effectiveness, strike profile effectiveness, tactics effectiveness, countermeasures equipment/expendables effectiveness, etc. (Proposed definition to be approved upon publication of this manual.)

**decentralized control**—In air defense, the normal mode whereby a higher echelon monitors unit actions, making direct target assignments to units only when necessary to ensure proper fire distribution or to prevent engagement of friendly aircraft. (Joint Pub 1-02) In military operations, a mode of battlespace management in which a command echelon may delegate some or all authority and direction for warfighting functions to subordinates. It requires careful and clear articulation of mission, intent, and main effort to unify efforts of subordinate leaders. (MCRP 5-12C)

**direct air support center**—The principal air control agency of the U.S. Marine air command and control system responsible for the direction and control of air operations directly supporting the ground combat element. It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with ground forces and other supporting arms. It normally collocates with the senior fire support coordination center within the ground combat element and is subordinate to the tactical air command center. (Joint Pub 1-02) Also called DASC.

**joint operation**—An operation carried on by a force which is composed of significant elements of the Army, Navy or the Marine Corps, and the Air Force, or two or more of these Services operating under a single commander authorized to exercise unified command or operational control over joint forces. Note: A Navy/Marine Corps operation is not a joint operation.

**Marine air command and control system**—A system which provides the aviation combat element commander with the means to command, coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. It is composed of command and control agencies with communications-electronics equipment that incorporates a capability from manual through semiautomatic control. Also called MACCS. (Joint Pub 1-02)

**positive control**—A method of airspace control which relies on positive identification, tracking, and direction of aircraft within an airspace, conducted with electronic means by an agency having the authority and responsibility therein. (Joint Pub 1-02) Also the tactical control of aircraft by a designated control unit, whereby the aircraft receives orders affecting its movements which immediately transfer responsibility for the safe navigation of the aircraft to the unit issuing such orders. (MCRP 5-12C under “Marine air command and control system”)

**procedural control**—A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures. (Joint Pub 1-02)

**rules of engagement**—Directives issued by competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat

engagement with other forces encountered. (Joint Pub 1-02) Also called ROE.

**tactical air command center**—The principal U.S. Marine Corps air command and control agency from which air operations and air defense warning functions are directed. It is the senior agency of the U.S. Marine air command and control system which serves as the operational command post of the aviation combat element commander. It provides the facility from which the aviation combat element commander and his battle staff plan, supervise, coordinate, and execute all current and future air operations in support of the Marine air-ground task force. The tactical air command center can provide integration, coordination, and direction of joint and combined air operations. Also called Marine TACC. (Joint Pub 1-02)

**tactical air control center**—The principal air operations installation (ship-based) from which all aircraft and air warning functions of tactical air operations are controlled. Also called Navy TACC. (Joint Pub 1-02)

**tactical air direction center**—An air operations installation under the overall control of the tactical air control center (afloat)/tactical air command center, from which aircraft and air warning service functions of tactical air operations in an area of responsibility are directed. Also called TADC. (Joint Pub 1-02)

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## Appendix E

### References and Related Publications

#### Joint Publications (Joint Pubs)

|        |                                                                      |
|--------|----------------------------------------------------------------------|
| 0-2    | Unified Action Armed Forces (UNAAF)                                  |
| 1-02   | Department of Defense Dictionary of Military<br>and Associated Terms |
| 3-0    | Doctrine for Joint Operations                                        |
| 3-01.5 | Doctrine for Joint Theater Missile Defense                           |
| 3-02   | Joint Doctrine for Amphibious Operations                             |
| 3-13.1 | Joint Doctrine for Command and Control<br>Warfare (C2W)              |
| 3-52   | Doctrine for Joint Airspace Control in the<br>Combat Zone            |
| 3-54   | Joint Doctrine for Operations Security                               |
| 3-56.1 | Command and Control in Joint Air Operations                          |
| 5-0    | Doctrine for Planning Joint Operations                               |

#### Marine Corps Doctrinal Publications (MCDPs)

|   |                          |
|---|--------------------------|
| 1 | Warfighting              |
| 2 | Intelligence             |
| 3 | Expeditionary Operations |
| 5 | Planning                 |
| 6 | Command and Control      |

### **Marine Corps Warfighting Publications (MCWPs)**

|         |                                                |
|---------|------------------------------------------------|
| 3-25    | Control of Aircraft and Missiles               |
| 3-25.3  | Marine Air Command and Control System Handbook |
| 3-25.5  | Direct Air Support Center Handbook             |
| 3-25.6  | Sector Antiair Warfare Coordinator Handbook    |
| 3-25.7  | Tactical Air Operations Center Handbook        |
| 3-25.8  | Marine Air Traffic Control Detachment Handbook |
| 3-25.10 | Low Altitude Air Defense Handbook              |
| 5-1     | Marine Corps Planning                          |

### **Marine Corps Reference Publications (MCRPs)**

|       |                                                                                |
|-------|--------------------------------------------------------------------------------|
| 3-0A  | Unit Training Management Guide                                                 |
| 3-0B  | How to Conduct Training                                                        |
| 5-2A  | Operational Terms and Graphics                                                 |
| 5-12C | Marine Corps Supplement to the DOD Dictionary of Military and Associated Terms |

### **Fleet Marine Force Manuals (FMFMs)**

|      |                                              |
|------|----------------------------------------------|
| 5-1  | Organization and Function of Marine Aviation |
| 5-30 | Assault Support                              |
| 5-50 | Antiair Warfare                              |
| 5-70 | MAGTF Aviation Planning                      |

**Fleet Marine Force Reference Publications  
(FMFRPs)**

- |      |                                                                                       |
|------|---------------------------------------------------------------------------------------|
| 5-61 | ICAC2: Multiservice Procedures for<br>Integral Combat Airspace Command<br>and Control |
| 5-71 | MAGTF Aviation Planning Documents                                                     |

**Marine Corps Orders (MCOs)**

- |                    |                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1553.3<br>P3500.19 | Marine Corps Unit Training Management<br>Aviation Training and Readiness Manual, Vol V,<br>Marine Air Command and Control System<br>(MACCS) |
| 3501.9B            | Marine Corps Combat Readiness Evaluation<br>System (MCCRES) Vol VIII, Marine<br>Command and Control System (MACCS)                          |

**Army Field Manuals (FMs)**

- |        |                                             |
|--------|---------------------------------------------|
| 34-130 | Intelligence Preparation of the Battlefield |
| 44-100 | U.S. Army Air Defense Operations            |

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